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INVENTIONS PATENTED.

NOTE—Patents are granted for 15 years. The term of years for which the fee has been paid, is given after the date of the patent.

No. 31,844. Manufacture of Material for Roofing and other purposes and Composition therefor. (*Fabrication de matériel à toiture et autres fins et composition pour cet objet.*)

The New Wire Wove Roofing Company, (assignee of Alfred N. Ford,) London, Eng., 1st August, 1889; 5 years.

Claim.—1st. A composition formed by the admixture of stearine-pitch, oil, soap, and petroleum oil, in about the proportions and for the purposes above set forth. 2nd. The manufacture of materials for the purposes stated by coating wire netting, and a suitable fabric, or a fabric alone with the above-named composition, substantially as described.

No. 31,845. Nut Machine. (*Machine à écrou.*)

George Dunham, (assignee of George M. Dunham), Unionville, Conn., U.S., 1st August, 1889; 5 years.

Claim.—1st. In a nut machine, the combination of a carrier having two recesses serving as partial dies, a stationary shear blade and a blanking out punch, substantially as described and for the purpose specified. 2nd. The combination of a carrier having two recesses, and a trimming punch and die, substantially as described and for the purpose specified. 3rd. The combination of a carrier having two recesses, and a blanking out punch and trimming die and punch, substantially as described and for the purpose specified. 4th. The combination of a carrier having two recesses, a swaging die and knock-out pin, substantially as described and for the purpose specified. 5th. The combination of blanking and trimming dies, a carrier having two recesses for receiving the nut blanks, and mechanism for locking the carrier during the action of the dies, substantially as described and for the purpose specified. 6th. The combination of a central blanking out shear, and two trimming punches arranged one on each side of said blanking shear, substantially as described and for the purpose specified. 7th. The combination of a swage or crowning die and two trimming dies arranged one on each side of said crowning die, substantially as described and for the purpose specified. 8th. The combination of a swage and knock-out pin and two trimming dies, one on each side of said swage, substantially as described and for the purpose specified. 9th. The combination of a punch and die for punching the central hole, a blanking out shear and die, a swage and knock-out pin, two trimming punches and dies, said trimming punches and dies located one on each side of said blanking-out shear, substantially as described and for the purpose specified. 10th. The combination of the slide H, bearing punches, the stationary dies and shear, the carrier having two recesses which serve as partial dies, and operating mechanism for said slide and carrier, whereby the slide has two motions to one of the carrier, substantially as described and for the purpose specified. 11th. The combination of a crowning die, a trimming die, a blanking punch and a carrier moving transversely to the movement of said blanking punch, and having a recess which serves the double function of blanking die in connection with said blanking punch, and pocket for carrying the blank, substantially as described and for the purpose specified.

No. 31,846. Binding Mechanism for Harvester Binder. (*Mécanisme de liage de moissonneuse-lieuse.*)

William D. Best and Peter Hamilton, Peterborough, Ont., 1st August, 1889; 5 years.

Claim.—1st. The shaft D suitably journaled in bearings attached to the frame of the machine, and provided with bevel pinions F and G, arranged to form a connection between the packer and knoter-shafts, substantially as and for the purpose specified. 2nd. The trip

M pivoted upon the needle shaft L in proximity to the needle N, and provided with a tail m, in combination with an adjustable dog O, arranged substantially as and for the purpose specified. 3rd. The combination, with the compressor-shaft P, of a finger G, arranged substantially as and for the purpose specified. 4th. The spring bolt R, in combination with the cam-shaped projection S formed on the gear wheel C, substantially as and for the purpose specified.

No. 31,847. Stop-Motion for Looms.

(*Mécanisme casse-mèche pour métiers.*)

William Taylor, Lawrence, (co-inventor with Christian G. Saalfrank, Worcester), Mass., U.S., 1st August, 1889; 5 years.

Claim.—1st. The combination as hereinbefore set forth, with a swinging locking-dog and a detector-fork mounted thereon, of a cam for elevating the fork to its highest position, the said cam provided with means for engaging the locking-dog when the fork detects the absence of the weft, the shipper-bar and the stop-motion rod provided with a spring and intermediate the said bar and cam, whereby the shipper-bar may be moved by the rod upon the locking of the cam by the locking-dog, substantially as and for the purpose herein described. 2nd. The combination as hereinbefore set forth, with the delay of the swinging locking-dog and the detector-fork mounted thereon, a cam for moving the dog so as to elevate the fork into its highest position, and provided with a projection for engaging the dog, whereby the dog may lock the cam, a shipper-bar for effecting the shipping of the belt, and a stop motion rod hinged to and operating the cam and engaging the shipper-bar when the cam is locked by the dog, a spring mounted on said rod to resist the motion imparted to the rod by the movement of the lay, substantially as and for the purpose herein described. 3rd. The combination as hereinbefore set forth, with the lay, of the swinging locking-dog and the detector-fork mounted thereon, a cam for raising the dog and provided with a projection for engaging the dog, whereby the latter may lock the cam, a shipper-bar and a stop-motion rod hinged by one end to the said cam for operating the latter, and engaging by the other end the shipper-bar, a fixed slotted bracket through the slot of which the other end of the said rod takes the rod being provided with a spring to resist the motion imparted to the rod by the movement of the lay, substantially as and for the purpose herein described. 4th. The combination as hereinbefore set forth, with the lay formed with a slot to receive the detector-fork, of a swinging locking-dog and the detector-fork mounted thereon and appropriate to engage the weft, the cam for raising the dog and provided with a projection or shoulder by means of which the dog may lock the cam, a shipper-rod provided with a stop, a stop-motion rod hinged by one end to the cam, and engaging by the other end the stop on the shipper-bar, a slotted bracket fixed to a stationary part of the loom, and the end of the stop-motion rod loosely passing through the slot of the bracket, a slide or washer working on the rod and abutting against the bracket, a stop also fixed to the rod and a spring intermediate the stop and the slide on the rod, substantially as and for the purpose herein described. 5th. The combination as hereinbefore set forth, with the lay of a loom, of the swinging locking-dog 8 provided with the detector-fork 12, the cam 15 provided with the projection 19 which is engaged by the dog, the stop-motion rod 20 hinged to the cam 15, and the slotted bracket 22 for receiving the end of the rod 20, the spring 25 mounted on the rod 20, the reciprocating shipper-bar 28 engaged by the rod 20, substantially as and for the purpose herein described. 6th. The combination as hereinbefore set forth, with the lay of a loom provided with the slot 33, of the swinging locking-dog 8 provided with the detector-fork 12 and mounted on the lay, the cam 15 provided with the projection 19, the stop-motion rod 20 having the enlarged end 24, and the spring 25, the stop 26 and the slide 27 mounted on the rod, the bracket 22 formed with the slot 23, the shipper-bar 28 provided with the adjustable stop 31, substantially as and for the purpose herein described.

No. 31,848. Combined Pipe Coupling and Check Valve or Chamber. (*Joint de tuyau et soupape d'arrêt ou coffre combinés.*)

George D. Wildes, Ipswich, (assignee of William T. Messenger, Boston), Mass., U.S., 1st August, 1889; 5 years.

Claim.—1st. The combination of a pair of coupling-pieces and a co-operating coupling-nut, with an independent chamber enclosed

within the said coupling-nut and engaged at its ends by said coupling-pieces, being laterally removable from between said coupling-pieces without separating them, the said chamber consisting of two parts, one provided with an inwardly projecting valve-seat and the other with a central valve-guide, and a valve enclosed within said parts and co-operating with said valve-seat and guide, substantially as described. 2nd. The combination of a pair of coupling-pieces and a co-operating coupling-nut, with an independent removable chamber engaged at its ends by said coupling-pieces and enclosed within the said coupling-nut, the said chamber being composed of a main part *e* having an internal valve-seat, and a valve guiding part *e'* composed of a ring *e*, an open frame *e'*, a valve guide *e'*, and a portion fitting within the said main portion *e*, substantially as and for the purpose set forth.

No. 31,849. Apparatus for Regulating Current or Potential in Secondary of Transformers. (*Appareil pour régler le courant ou potentiel dans les piles secondaires.*)

The Thomson-Houston International Electric Company, Boston, (assignee of Elihu Thomson, Lynn), Mass., U.S., 1st August, 1889; 5 years.

Claim.—1st. An induction-coil or transformer having a partial magnetic shunt of determinate capacity for the magnetism threading the coils, whereby the potential of the secondary current may be automatically lowered on an increase of such current, as and for the purpose described. 2nd. In an induction-coil or transformer, a partially-closed magnetic circuit consisting of polar extensions or magnetic carriers from the parts of the core between the primary and secondary brought into close proximity, as and for the purpose described. 3rd. The combination, with an induction-coil or transformer having a magnetic shunt, of a conductor suspended or movable in the shunting lines of force, as and for the purpose described. 4th. The combination, with constant potential mains of a transformer, a secondary for said transformer, feeding translating devices in series, and a magnetic shunt for the transformer having a definite or determinate capacity such as described, proper for limiting the currents in the secondary so as to keep or tend to keep the same of constant amount, as and for the purpose described. 5th. The combination, with an iron core threading two alternating-current coils of magnetic carriers or extensions for said core brought into close proximity and forming a magnetic shunt variable in amount automatically by the increase or decrease of current in one of said coils, as described. 6th. The combination, with two alternating-current coils placed in inductive relation upon a suitable core, of a magnetic shunt for the magnetism threading said coils, and of definite or determinate strength increasing automatically with an increase of current in the coil. 7th. The combination, with two alternating-current coils wound on different parts of the same core, of iron masses tending to form a magnetic shunt for the portions of core between the coils, and adjustable for the purpose of determining the amount of the magnetic shunting. 8th. The combination, with constant potential mains, of a transformer having its primary fed therefrom, a secondary on a different portion of core, and a partial magnetic shunt for the portion of core between the coils. 9th. The combination, with the primary, of two secondaries connected in series and applied to different parts of the same core, one near to and the other more remote from the primary, and a partial magnetic shunt for the core, as and for the purpose described. 10th. The combination, with two alternating current mains, of transformers having a variable resistance in their secondaries, and partial magnetic shunts for the portion of cores threading the secondaries, as and for the purpose described. 11th. A system of distribution for arc lighting, comprising constant potential mains, transformers in multiple on said mains, arc-light circuits connected to the secondaries, and potential regulators consisting of partially-closed magnetic circuits set up by the currents of either or both of said coils. 12th. The combination, with primary and secondary alternating circuits in inductive relation, of an iron core forming a seat of alternating magnetism developed by one of said circuits, and having extensions brought into close proximity to form a partially-closed magnetic circuit of determinate amount variable automatically with the currents flowing. 13th. The combination, with primary and secondary alternating-current circuits in inductive relation, of an iron core forming the seat of alternating magnetism, developed by the current in the secondary and extensions from said core brought into proximity to form a partially closed magnetic circuit of definite or determinate amount. 14th. The combination, with an alternating current main, of a transformer having a variable resistance in its secondary, and a core which forms the seat of magnetism developed by the secondary currents, and is provided with extensions brought into proximity to form a partially-closed magnetic circuit of determinate amount, as and for the purpose described. 15th. The combination, with an induction coil or converter, of a partially-closed magnetic circuit excited by the current in each or either of the electric circuits, and a conducting-plate normally suspended in a gap in such magnetic circuit, as and for the purpose described. 16th. The combination, with an induction-coil or converter, of magnetic carriers such as iron-core extensions from a core, excited by the current which flows in one of the coils of the converter, and means for adjusting the magnetic resistance between the parts of the core partially shunted by said carriers or extensions, as and for the purpose described. 17th. An induction coil or converter having an endless iron-core or magnetic circuit on which the primary and secondary coils are disposed at different points, and having parts or extensions of said core brought into determinate magnetic inductive proximity to form a partially-closed magnetic circuit of definite capacity, independent of the closed magnetic circuit over the iron core and through the coils. 18th. An induction coil or converter having primary and secondary conductors wound on different parts of the core, and having parts of said core brought into proximity but separated by a magnetic shunting-space of definite or determinate capacity, as described, proper for keeping the current in the secondary approximately constant when the primary is supplied from a constant potential source.

No. 31,850. Combined Anvil and Vise.

(*Enclume et étau combinés.*)

William G. Avery, (assignee of John P. Holt), Cleveland, Ohio, U.S., 1st August, 1889; 5 years.

Claim.—1st. The combination, with anvil having longitudinal chambers and internal ribs, substantially as indicated, of vise having an arm adapted to enter such chamber above the said ribs, said arm having recesses adapted to engage and interlock with the ribs of the anvil when the vise is depressed to its normal position in the anvil, substantially as set forth. 2nd. The combination, with anvil and vise, the anvil having chambers and ribs, and the vise having arms adapted to engage such ribs, substantially as indicated, of lip or shoulder of the vise, said lip or shoulder being adapted to engage the top of the anvil to support the vise in its normal or locked position, substantially as set forth. 3rd. The combination, with anvil and vise, substantially as indicated, of shoulders on the base of the anvil for embracing the contiguous jaws of the vise, substantially as set forth. 4th. The combination, with anvil and vise, the anvil having chamber and internal ribs, and the vise having an arm adapted to enter such chamber and engage such ribs, of key inserted in lateral holes in the anvil, said key bearing upon the arm of the vise when the latter is in its depressed or locked position, substantially as set forth.

No. 31,851. Combination Tool.

(*Outil à combinaison.*)

Franklin L. Downend, Charles F. Mott, Halifax, N.S., and John O. Hibbard, Cincinnati, Ohio, U.S., 1st August, 1889; 5 years.

Claim.—A combination tool comprising a hammer or hatchet A having a spike F, and skeleton handle B having a partition C, and claw termination K integrally cast, the cutter D sliding within the handle and provided with an adjusting and clamping screw F, and the cork-screw G located in the lower division of the handle, as set forth.

No. 31,852. Hydraulic Excavating.

(*Creusage hydraulique.*)

Daniel B. Long, Buffalo, (co-inventor with David N. Long), Williams-ville, N.Y., U.S., 1st August, 1889; 5 years.

Claim.—The herein described method of excavating for ditches, canals, or other purposes, consisting in excavating the soil by hydraulic erosion by causing the water to flow over a dam upon and over a portion of the soil until removed, and moving the dam up stream and securing it until another similar portion of soil is removed, which operation is repeated until the desired excavation is made, substantially as described.

No. 31,853. Horse Shield. (*Housse de cheval.*)

Frank W. Floyd and George A. Foster, (assignees of Nelson E. Springsteen), Detroit, Mich., U.S., 1st August, 1889; 5 years.

Claim.—1st. The shield A interiorly provided with spurs and having a water outlet, in combination with the strap B secured to the rear end thereof, and adapted to embrace the tail of the animal, the back-strap D, the strap F secured to the front of said shield and connected with the collar E which is connected to said back-strap, and the loin-straps G, the straps D, B and G, all being fastened together at C, substantially as and for the purposes described. 2nd. The shield A interiorly provided with spurs having a lining of patent leather and having a water-outlet, in combination with the strap B secured to the rear end thereof, and adapted to embrace the tail of the animal, the back-strap D, the strap F secured to the front of said shield, and connected with the collar E which is connected to said back-strap and the loin-straps G, the straps D, B and G all being fastened at C, substantially as described.

No. 31,854. Holdback for Vehicle Thills.

(*Ragot de limonière.*)

Morris E. Burt, Lowville, and Noel E. Jones, Harrisburgh, N.Y., U.S., 1st August, 1889; 5 years.

Claim.—As an improved article of manufacture, the herein described hold-back for vehicle thills, the same consisting of the plate *a* having the chamber or recess *b* upon its side, as shown, the hook integral with said plate, the spring within said chamber or recess, and the tongue pivoted within an enlargement on said plate, and having a bearing at its lower end on said spring, substantially as described and for the purpose specified.

No. 31,855. Lasting Machine.

(*Machine à enformer.*)

Alfred Dolge, New York, (assignee of John W. Millet, Dolgeville), N.Y., U.S., 1st August, 1889; 5 years.

Claim.—1st. In a lasting-machine, the combination of a support carrying a last, a series of swinging levers having friction shoes to press the upper inward upon the insole, arms *o* for swinging the levers, and a reciprocating flange E for actuating said arms, substantially as described. 2nd. In a lasting-machine, the combination, with a last support, of a series of swinging levers *r* carrying friction shoes, arms *o* for swinging the levers, a movable flange E for actuating the arms, and a rotary cam for operating the flange, substantially as described. 3rd. In a lasting-machine, the combination, with a last and mechanism for lasting the upper, of a yielding last-supporting spindle F, and a sleeve L secured directly to the spindle and adjustable along the same, and having a last toe support pivoted to said sleeve, substantially as described. 4th. In a lasting-machine, the combination, with a last and mechanism for lasting the upper, of a yielding last-supporting spindle F, and a sleeve L secured directly to the spindle

and adjustable along the same, and having a pivoted arm V, provided with a last toe-support N, substantially as described. 5th. In a last-making-machine, the combination, with a last, and levers having friction pieces, of an under plate H, and a supporting-plate M for the levers, arranged on the under plate, and composed of an adjustable section, and a removable and replaceable section or sections, substantially as described. 6th. In a last-making-machine, the combination, with a vertically movable last, of a reciprocating arm f provided with an adjustable lever g h, for holding down said last, and a connecting rod C, and actuating-cam A connected to said arm f, substantially as described.

No. 31,856. Lifting Jack. (*Cric.*)

Pettibone, Mulliken and Company, Chicago, (assignees of Axel A' Strom, Austin), Ill., U.S., 1st August, 1889; 5 years.

Claim.—1st. In a lifting-jack, the combination, with the standard A, the lifting-bar B, the lifting and retaining clutches and the operating lever, of a heel l on the lifting-bar, and a chamber H along the back of the standard, confining and guiding the heel, substantially as and for the purpose set forth. 2nd. In a lifting-jack, the combination, with the standard having an expanded portion C, the lifting-bar B, the lifting and retaining clutches and the operating lever, of a hook f on the forward side of the collar of the lifting-clutch, and a hanger G pivotally connected at one end with the bifurcated end of the operating lever, and having a slot c at which it engages with the hook f, substantially as described. 3rd. In a lifting-jack having a standard A provided with an expanded portion C, a lifting-bar B, retaining and lifting clutches D and E, and an operating lever F fulcrumed in the standard and linked to the lifting-clutch, the combination, with the standard, of a guide-collar o, extending across and integral with the expanded portion C of the standard, substantially as described. 4th. A lifting-jack comprising in combination, a slotted standard A, having an expanded portion C containing a guide-collar o extending across and integral with it, recesses in the upper ends of the said expanded portion, an operating lever F fulcrumed in boxes rigid in the said recesses, a retaining-clutch D, a lifting-clutch E linked to the operating lever, a guide-chamber H on the rear side of the standard below the expanded portion thereof, and a lifting-bar B having a foot r, and a heel l extending into the chamber H, substantially as described.

No. 31,857. Reversible Ratchet Clutch Mechanism. (*Mécanisme de renversement d'embrayage à rochet.*)

William B. Turner, New York, N. Y., and Cornelius C. Beard, Boston, Mass., U.S., 1st August, 1889; 5 years.

Claim.—1st. In a reversible ratchet clutch mechanism, a shaft, a shell and a sleeve on the said shaft, combined with two sets of oppositely inclined teeth, and with pawls or latches to co-operate with the said teeth, substantially as described. 2nd. In a reversible ratchet clutch mechanism, a shaft, a shell and a sleeve on the said shaft, combined with two sets of oppositely inclined teeth, and with gravity pawls or latches to co-operate with the said teeth, substantially as described. 3rd. In a reversible ratchet clutch mechanism, a shaft and a sleeve provided with oppositely inclined teeth, as b, b', combined with a shell, and a series of pawls pivoted to said shell to co-operate with the said inclined teeth, substantially as described.

No. 31,858. Upright Boiler. (*Chaudière verticale.*)

The Watrous Engine Works Company, Branford, Ont., (assignee of Frederick L. Watrous, St. Paul, Minn., U.S.) 1st August, 1889; 5 years.

Claim.—1st. In an upright boiler, a water chamber inclosed around the upper end of the flues by the upper flue sheet and a diaphragm located a little below it, an overflow opening from said chamber above said flue sheet, whereby water is maintained constantly in contact with said flue sheet, and the upper ends of the flues, substantially as and for the purposes set forth. 2nd. In an upright boiler, the combination, with the upper flue sheet, of a diaphragm located a little below and enclosing therewith around the upper ends of the flues, a water space, a supply pipe opening into said chamber, and an eduction pipe leading out therefrom above said flue sheet, substantially as and for the purpose set forth. 3rd. In an upright boiler, a water chamber around the upper ends of the flues formed by a double head consisting of the upper flue sheet, and a diaphragm located a little below it, a water supply pipe leading into said chamber, a stand pipe opening at its lower end into and extending above said chamber, and an eduction pipe leading out of said stand pipe above the upper flue sheet into the lower part of the boiler, substantially as and for the purpose set forth. 4th. In an upright boiler, the combination, with a water chamber around the upper end of the flues formed by a double head consisting of the upper flue sheet, and a diaphragm located a little below it, a water supply pipe leading into said chamber, a stand pipe opening at its lower end into and extending above said chamber, and an eduction pipe leading out of said stand pipe above the upper flue sheet into the lower part of the boiler, of a series of radial tubes secured to the fire box, said tubes opening into and communicating with the water space in the boiler where they are secured to the fire box, the opposite end of each tube being closed and a dividing plate placed internally in each of said radial tubes, as and for the purposes set forth.

No. 31,859. Rotary Motor Actuated by Elastic Fluid Pressure and Applicable also as Pump. (*Moteur rotatif actionné par la pression d'un fluide élastique et pouvant aussi servir de pompe.*)

Edward Towlson and William T. Sturgess, Norwich, Eng., 1st August, 1889; 5 years.

Claim.—1st. In a rotary motor (or pump), the combination of two wheels or hubs mounted to rotate in unison in opposite directions, and

each provided with a single tooth or projection, a recess adjacent to said tooth or projection, and with fine pitched teeth extending nearly around its periphery, the teeth on one piston being in gear with those on the other piston, a casing constructed with a pair of connected chambers wherein said wheels or hubs rotate, and having an upper inlet passage, a valve chamber in connection therewith, a short port or passage connecting said valve chamber with the interior of said casing, and an outlet port and passage at its lower side, an expansion valve located within said valve chamber, self-adjusting packing carried by each of said teeth or projections, and adapted to bear against the interior of said casing, and self-adjusting packing located between the ends of said wheels or hubs and the adjacent ends of the casing, substantially as herein described for the purpose set forth. 2nd. In a rotary motor (or pump), the combination, of two wheels or hubs mounted upon shafts and arranged to rotate in opposite directions, and each provided with a single tooth or projection, a recess adjacent to said tooth or projection, and fine pitched teeth extending nearly around its periphery, the teeth on one wheel or hub being in gear with those on the other wheel or hub, a casing with chambers wherein said wheels or hubs rotate, and formed with upper inlet passage and lower outlet passage, packing carried by each tooth or projection and adapted to bear against the inner periphery, and ends of the casing packing located between the ends of said wheels or hubs and the adjacent ends of the casing, and toothed wheels mounted upon said shafts and arranged to cause said piston to rotate in unison, substantially as herein described. 3rd. In a rotary engine (or pump), the combination, of wheels of hubs 1, 2, each provided with a single tooth or projection 4, a recess 5 adjacent to said tooth or projection, and with fine pitched teeth 3 partly surrounding its periphery, the teeth on one wheel or hub being arranged to gear with those on the other wheel or hub and form a fluid-tight joint, a casing formed with chambers 7 wherein said pistons rotate in opposite directions, upper inlet passage for motive fluid, cylindrical valve chamber 15 in connection therewith, a short inlet port or passage 8 connecting said valve chamber with the interior of said casing, and a lower outlet passage, a cylindrical expansion valve 14 within said valve chamber, and self-adjusting packing to form a fluid-tight joint between the projection and the inner periphery of the casing, and between the wheels or hubs and adjacent ends of the casing, substantially as herein described. 4th. In a rotary engine (or pump), the combination of two wheels or hubs adapted to rotate together in unison, with a fluid-tight joint between them, and each provided with a single tooth or projection journaled therein at an angle with a radius line of the piston, and with a recess adjacent to said tooth or projection, and adapted to permit of the passage of the projection of an adjacent piston chambers, wherein said wheels or hubs rotate, and a spring or springs adapted to press the outer end of each of said teeth or projections into close contact with the internal surface of said chamber, substantially as herein described for the purpose specified.

No. 31,860. Machine for Securing Spokes in Wheel Hubs. (*Machine à assujétir les rais dans les moyeux.*)

William P. Bettendorf, Davenport, Iowa, U.S., 1st August, 1889; 5 years.

Claim.—1st. In a spoke fastening machine, a spoke holding clamp J₃ in combination with the pivoted header carrying arm C₁, the eccentric C₅, the rod C₄, connecting the eccentric and arm, and the yielding hub support B. 2nd. In a spoke fastening mechanism, the pivoted arm C₁ provided with a heading tool C to enter a hub, in combination with an eccentric C₅, and a connecting rod C₄ mounted at one end around the eccentric, and pivoted at the other end to the header carrying arm, as shown. 3rd. In a spoke fastening machine, in combination with a heading tool C to enter the hub, the hub sustaining device B, in combination with a supporting spring B₃ and a depressing lever B₅. 4th. In combination with the vibratory heading tool C, the hub support B, the vertically sliding head B₂ having a horizontal sliding connection with the support B, the spring C₈ to retract the support, the spring B₃ to lift the head, and the lever B₅ to depress the same. 5th. In combination with the connected clamp levers H, H₁, their operating pitman K, the reciprocating rod K₁ connected to the latter, its actuating cam L and the retracting spring. 6th. In a spoke fastening machine, the clamping levers H, H₁, their actuating pitman K, the reciprocating rod K₁, the lever K₂ for starting said rod, its actuating cam L, the cam driving clutch D₂ and the clutch controlling lever K₄ operated by the rod as shown, whereby the initial closing of the jaws is caused to set the cam in motion. 7th. In combination with the connected clamp levers H, H₁, their actuating pitman K, the reciprocating rod K₁ connected to the pitman and provided with a stud K₃, the rod retracting spring, the rod operating cam L, its driving clutch D₂ and the clutch operating lever K₄ provided with the opening having oblique edges, as described, to move the lever K₄ in both directions. 8th. In a machine for seating metallic spokes, the combination of a heading tool C₁ and its operating mechanism, a spoke clamp H, H₁ and a clamp operating cam L of irregular form, timed to release the spoke as soon as the heading tool completes its action.

No. 31,861. Flour Bolt. (*Blutoir.*)

William M. Lucas, Uhrichsville, Ohio, U.S., 1st August, 1889; 5 years.

Claim.—1st. The combination of the outer casing, a reciprocating sieve, a cleaning frame below the sieve, the upper portion of which is between the side bars of the sieve and is guided in its vertical movements thereby, a bent shaft below the frame and the leather straps secured to the frame and to the sides of the casing. 2nd. The combination of a casing, a partition in one end of the casing, a reciprocating sieve, one end of which projects over the partition, a frame below the sieve, the upper portion of which is between the side bars of the sieve, and is guided in its vertical movement thereby, and a bent shaft, one end of which is journaled in the partition and the other end in the casing. 3rd. The combination of a reciprocating sieve, a cleaning frame below the sieve, the upper portion of which is between the side bars of the sieve, and is guided in its

vertical movements thereby, a bent shaft below the frame, a slotted arm secured to one end of the casing, and an adjusting arm secured at one end to one end of the shaft, and at the other end to the slotted arm. 4th. The combination of an outer casing as frame, two arms pivotally secured at their outer ends to the frame, a grooved nut engaging with the inner ends of said arms, a screw threaded bolt secured to the top of the casing and having their lower ends bent and secured to the central portions of said arms.

No. 31,862. Saw Mill Feed Work.

(Transmission de mouvement de scierie.)

Howard P. Heacock, Missoula, M. T., U. S., 1st August, 1889; 5 years.

Claim.—The combination, in a saw mill, of two belts driven from the saw arbor and running over pulleys on a shaft of the feed works, one of said belts having the same side in contact with both pulleys over which it runs, and the other belt having its opposite sides in contact with its respective pulleys, and a tightener adapted to operate alternately on said belts, substantially as described.

No. 31,863. Centrifugal Apparatus.

(Appareil centrifuge.)

Sven Jonsson, Copenhagen, Denmark, 1st August, 1889; 5 years.

Claim.—In centrifugal apparatus for separating milk, the employment of a passage for the skim milk, bounded by two walls R and P which come close up to the inner wall of the drum, and between which is provided the outflow opening, and which are arranged in such a manner as to allow of a narrow passage for the skim milk either behind the outer side of the one or of both of the said walls.

No. 31,864. Car Brake and Starter.

(Frein et impulseur de char.)

Amos M. Vereker and Stephen M. Yeates, Dublin, Ireland, 1st August, 1889; 5 years.

Claim.—1st. A car brake and starter employing clutching mechanism, a source of power connected therewith, and a clutch operating mechanism, substantially as described. 2nd. In a car brake and starter, the combination, with the car axles, of chain or belt gearing, clutch sections keyed on the car axles, other clutch sections sliding on the axles, and a clutch operating mechanism, substantially as described. 3rd. In a car brake and starter, the combination, with clutch mechanism, of an endless chain or belt acting directly on the car axles, and an operating system of levers working from both ends of the car, substantially as described. 4th. A car brake and starter employing clutching mechanism, a spring connected therewith, and a clutch operating mechanism, substantially as described. 5th. In a car brake and starter, the combination, with the axle, of clutch sections carried thereby, other clutch sections held to slide on the axles, a spring connection between one set of clutch sections and the spring, and a clutch operating mechanism, substantially as described. 6th. In a car brake and starter, the combination, with the axles, of a clutch section rigidly mounted thereon, clutch sections held to slide and turn thereon, spring connections between the springs and the sliding clutch sections, and a clutch operating mechanism, substantially as described. 7th. In a car brake and starter, the combination, with the axles, of clutch sections rigidly mounted thereon, other clutch sections held to slide and to turn upon the axles, levers carrying yokes which engage the sliding clutch sections, a spring which acts to throw the clutch sections into engagement, a spring 20, connections between the spring 20 and the sliding clutch sections, a transverse shaft provided with arms, connections between the yoke carrying levers and said arms, levers which extend to within reach of the driver and draw bars, connection between the levers, draw bars and the transverse shaft being established, substantially as described.

No. 31,865. Railway Car. (Char de chemin de fer.)

William W. Green and James Murison, Chicago, Ill., U. S., 1st August, 1889; 5 years.

Claim.—1st. The combination of the spool-shaped metal struts c and the tie rods c₁, with a series of longitudinal members A, B arranged parallel to each other, and each composed of two metal plates b connected together by bolts or rivets r extending through an interposed spacing material, and by the tie rods c₁ extending through the struts c from side to side of the frame, substantially as described. 2nd. The combination of the series of longitudinal members A, B, and terminal spacing members f, with the outside metal plates b bent around the corners of the frame at b₁, and bolted to the spacing members f, substantially as described. 3rd. The combination of the longitudinal members A, B, the terminal spacing members f, and the outside metal plates b bent around the corners of the frame, with the transverse end plates e bolted to the bent plates b, and spacing members f, substantially as described. 4th. The combination of the composite longitudinal members A, B, the struts c, the tie rods c₁, the terminal spacing members f, the outside plates b bent around the corners of the frame, and the transverse end plates e bolted to the bent plates b, and spacing members f, substantially as described. 5th. The combination of the metal side pieces d, bent at their upper end to form the ribs d₂, with separable pieces d₁ for the arch or raised deck, substantially as described. 6th. The combination of the metal side pieces d, bent at their upper end to form the ribs d₂, with the separable pieces d₁ for the arch or raised deck, and the angle iron longitudinal member g connecting the parts d₁, d₂, substantially as described. 7th. In a metal car frame, the combination of the angle iron corner posts D₂ with the transverse frame pieces D, and their longitudinal connections, substantially as described. 8th. In a metal car frame, the combination of the transverse frame pieces D, their longitudinal connections and the sills B,

with the braces d₃, substantially as described. 9th. In a metal car frame, the combination of the transverse frame pieces D, and the longitudinal members H, I, with the socket pieces T, substantially as described. 10th. In a metal car frame, the combination of the transverse frame pieces D, and the longitudinal members H, I, with the socket pieces T provided with the interior concavity t₂ and filling hole t₃, substantially as described.

No. 31,866. Range. (Lanlier.)

George H. Phillips, Geneva, N.Y., U.S., 1st August, 1889; 5 years.

Claim.—1st. The combination, with a suitable range plate A, of a suitable range shelf C having the hook C₂, substantially as and for the purpose set forth. 2nd. The combination, with a suitable range plate A, of a suitable range shelf C having the integral hook C₂, substantially as described. 3rd. The combination, with a suitable range shelf C having a hook C₂ of the collar B having the recess or depression B₁, substantially as and for the purpose set forth. 4th. The combination of the top range plate A and the collar B, with the shelf C and the hook C₂, substantially as specified. 5th. The combination of the top range plate A, the collar B, the recess or depression B₁ and an opening b₂, in the collar, with the shelf C, the hook C₂, substantially as and for the purpose set forth. 6th. The combination of the top range plate A, with the shelf C, the hook C₂, the shoulders d₁ and bolts E, substantially as and for the purpose specified.

No. 31,867. Rolling Mill for Making Tubes from Hollow Metal Ingots. (Laminoir pour faire les tubes avec des lingots de métal creux.)

Stephen P. M. Tasker, Philadelphia, Penn., U.S., 1st August, 1889; 5 years.

Claim.—1st. In a rolling mill, the combination of a roller mandrel having two or more mandrel rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing and external compressing rolls, substantially as set forth. 2nd. In a rolling mill, the combination of a roller mandrel having two or more mandrel rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing, external compressing rolls, gearing for positively driving said compressing rolls, and a prime mover for actuating said gearing, substantially as set forth. 3rd. In a rolling mill, the combination of a roller mandrel having two or more mandrel rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing, external compressing rolls, and adjusting gearing for simultaneously setting up toward a common centre all of the external compressing rolls, substantially as set forth. 4th. In a rolling mill, the combination of a roller mandrel having two or more mandrel rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing, external compressing rolls, gearing for positively driving said compressing rolls, a prime mover for actuating said gearing, and adjusting gearing for simultaneously setting up toward a common centre all of the external compressing rolls, substantially as set forth. 5th. In a rolling mill, the combination of a roller mandrel having two or more mandrel rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing, external compressing rolls, idler carrying rolls for supporting the ingot, substantially as set forth. 6th. In a rolling mill, the combination of a roller mandrel having two or more mandrel rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing, external compressing rolls, adjusting gearing for simultaneously setting up toward a common centre all of the external compressing rolls, idler carrying rolls for carrying and supporting the ingot, and adjusting gearing for adjusting the vertical set of said carrying rolls, substantially as and for the purposes set forth. 7th. In a rolling mill, the combination of a roller mandrel having two or more mandrel rolls, gearing for positively driving said rolls, a prime mover for actuating said gearing, external compressing rolls, gearing for positively driving said compressing rolls, a prime mover for actuating said gearing, adjusting gearing for simultaneously setting up toward a common centre all of the external compressing rolls, idler carrying rolls for carrying and supporting the ingot, and adjusting gearing for adjusting the vertical set of said carrying rolls, substantially as and for the purposes set forth. 8th. In a rolling mill, the combination of a series of roller mandrels each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed, as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, and a series of sets of external compressing rolls corresponding in number with the mandrels, the rolls of said respective sets being alternated or interdisposed, as set forth, and operating respectively in connection with corresponding rolls of corresponding mandrels, substantially as set forth. 9th. In a rolling mill, the combination, of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed, as set forth, gearing common to the rolls of all of the mandrels, for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed, as set forth, and operating respectively in connection with corresponding rolls of corresponding mandrels, gearing for positively driving said compressing rolls, and a prime mover for actuating said gearing, substantially as set forth. 10th. In a rolling mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed, as set forth, gearing common to the rolls of all of the mandrels, for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed, as set forth, and operating respectively in connection with corresponding rolls of corresponding mandrels, and adjusting gearing for simultaneously setting up toward a common centre, all of the compressing rolls of all of the sets, substantially as set forth. 11th. In a rolling mill, the

combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed, as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed, as set forth, and operating respectively in connection with corresponding rolls of corresponding mandrels, gearing for positively driving said compressing rolls, a prime mover for actuating said gearing, and adjusting gearing for simultaneously setting up toward a common centre all of the compressing rolls of all of the sets, substantially as set forth. 12th. In a rolling mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed, as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed, as set forth, and operating respectively in connection with corresponding rolls of corresponding mandrels, and idler carrying rolls for carrying and supporting the ingots, substantially as set forth. 13th. In a rolling mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed, as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed, as set forth, and operating in connection with corresponding rolls of corresponding mandrels adjusting gearing for simultaneously setting up toward a common centre all of the external compressing rolls, idler carrying rolls for carrying and supporting the ingot, and adjusting gearing for adjusting the vertical set of said carrying rolls, substantially as set forth. 14th. In a rolling mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed, as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed, as set forth, and operating in connection with corresponding rolls of corresponding mandrels, gearing for positively driving the set of external compressing rolls, a prime mover for actuating said gearing, adjusting gearing for simultaneously setting up toward a common centre all of the external compressing rolls, idler carrying rolls for carrying and supporting the ingot, and adjusting gearing for adjusting the vertical set of said carrying rolls, substantially as set forth.

No. 31,868. Beam End Protector.

(*Sabot de poutre.*)

Henry A. Goetz, New Albany, Ind., U.S., 1st August, 1889; 5 years.

Claim.—A beam end protector having bottom A, with lug a, dove-tailed sides, as B, B, and back wall C, substantially as and for the purpose hereinbefore set forth.

No. 31,869. Carriage Bow.

(*Branche de capote de voiture.*)

James C. Cose, William G. Avery, and Joseph A. Osborne, Cleveland, Ohio, U.S., 1st August, 1889; 5 years.

Claim.—1st. The within-described bow-socket consisting of the tube A, the tube B fitted therein, and the slat-iron C, substantially as shown. 2nd. The within-described bow-socket consisting of two tubes, one tube being fitted within the other, and the slat-iron, substantially as shown. 3rd. In a bow-socket, the double tube, one tube being fitted within the other, substantially as shown. 4th. In a bow-socket, the tube B having the slit b, in combination with the tube A, substantially as shown. 5th. The combination, in a carriage bow, of the tube A, the tube B fitted within the tube A, and the short bow D, substantially as shown. 6th. The combination, in a carriage-bow, of the tube A, the tube B fitted within the tube A, the slat-iron C and the short bow D, substantially as shown.

No. 31,870. Metallic Railway Tie.

(*Traverse métallique de chemin de fer.*)

Walter H. Donaldson and Robert B. Reid, San Francisco, Cal., U.S., 1st August, 1889; 5 years.

Claim.—1st. In combination with a railway-tie and the rail thereon, clamps or dogs pivoted in the top of the tie, and having their upper ends hooked and engaging the base-flanges of the rails, and their lower ends passing beneath the top of the tie, and wedges driven transversely through the tie and bearing on the lower ends of the dogs, whereby they are deflected and their upper ends made to clamp the rails, substantially as described. 2nd. In combination with a railway-tie and the rails thereon, clamps or dogs pivoted in slots in the tie and having their upper ends hooked and engaging the base-flanges of the rails on their inner and outer sides, and their lower ends passing in opposite directions and crossing under the top of the tie, and transverse wedges through the tie and acting on the lower ends of the dogs to cause their upper ends to clamp the rails, substantially as described. 3rd. A metallic railway-tie or sleeper having a top plate with longitudinal slots, and down-turned side flanges with transverse slots, in combination with clamps or dogs pivoted in the slots of the top plate, and having their upper ends hooked and engaging the flanges of the rails, and their lower ends crossing under the top plate, and wedges driven through the slots of the side flanges and bearing on the lower ends of the dogs, whereby their upper ends are clamped on the flanges of the rails, substantially as herein described. 4th. A metallic railway-tie or sleeper having a top plate with longitudinal slots, down-turned side flanges with transverse slots, and a central longitudinal web with transverse slots, in

combination with clamps or dogs pivoted in the slots of the top plate, and having their upper ends hooked and engaging the flanges of the rails, and their lower ends crossing under the top plate, and wedges driven through the slots of the side flanges and central web, and bearing on the lower ends of the dogs, whereby their upper ends are clamped on the flanges of the rails, substantially as described.

No. 31,871. Rail Cutting Machine

(*Machine à couper les rails.*)

Thomas G. Perkins, Chicago, and E. C. Read, Blue Island, Ill., U.S., 1st August, 1889; 5 years.

Claim.—1st. The combination, in a rail-cutting machine, of a rotary cutter, a horizontally reciprocating table carrying at one end the rotary cutter, and a stationary turntable at one end of the machine provided with means for supporting a rail thereon, and serving to permit setting of the supported rail to any angle in the horizontal plane with reference to the vertical plane of the rotary cutter, substantially as described. 2nd. The combination, in a rail-cutting machine, of a rotary cutter, a horizontally reciprocating table carrying at one end the rotary cutter, a stationary turntable at one end of the machine, and provided with means for supporting a rail thereon, and serving to permit setting of the supported rail to any angle in the horizontal plane with reference to the vertical plane of the rotary cutter, and an angle-indicating attachment geared to the turntable, and operated by the rotation thereof, substantially as described. 3rd. In a rail-cutting machine, in combination with the bed A, a reciprocating table B carrying a saw D, a rack B₁ on the table B, a shaft *q* provided with a cog-wheel *q*₁ in mesh with the rack, and with a worm-wheel *q*₂, a worm shaft *p* having its worm in mesh with the wheel *q*₂, and a driving-shaft *p*₁ geared to the shaft *p*, substantially as described. 4th. In a rail-cutting machine, in combination with the bed A, a reciprocating table B carrying a saw D vertically adjustable on its support, substantially as described. 5th. In a rail-cutting machine, in combination with the bed A, a reciprocating table B carrying a saw D on a rotary shaft *o*, rotary shafts *o* and *o*₁ supported on the bed, a rotary shaft *o*₅ supported on the table B, and an endless belt *m* connecting the shaft *o* and saw-shaft, and passing over the intermediate shafts *o*₃ and *o*₅ to form a compensator, substantially as described. 6th. In a rail-cutting machine, in combination with the bed, a reciprocating table N carrying a saw D, a turntable E adjacent to the saw, and a guard E₁ upon the turntable provided with a clamp for holding a rail to be cut, substantially as described. 7th. In a rail-cutting machine, in combination with the bed, a saw D, a turntable E having teeth on its periphery, a worm-shaft *i* in mesh with the teeth of the turntable, and carrying a cog-wheel *i*₁, a rotary shaft *i*₃ carrying a cog-wheel *i*₂ in mesh with the wheel *i*₁, and a protractor C having a dial finger *h*₃ connected by suitable gearing with the shaft *i*₃, whereby rotation of the said shaft turns the table E, and the dial-finger to indicate upon the protractor the angle to which the table E is turned, substantially as described. 8th. In a rail-cutting machine, in combination with the bed, a saw D, a turntable E having teeth on its periphery, a worm-shaft *i* in mesh with the teeth of the turntable and carrying a cog-wheel *i*₁, a rotary shaft *i*₃ carrying a cog-wheel *i*₂ in mesh with the wheel *i*₁, a miter-gear *g*₁, a cog-wheel *g*₂, and a dial-finger *g*₃, a stationary minute dial H surrounding the shaft *i*₃, and having a second dial H₁ marked upon it, a shaft *e*₁ carrying a pinion *e*₂ in mesh with the wheel *g*₂, and a cog-wheel *e*, an arbor *f* carrying a dial-finger *f*₄ for the dial H₁, and a pinion *f*₁ in mesh with the cog-wheel *e*, a worm-shaft *h* carrying a miter-gear *g* in mesh with the miter-gear *g*₃, a rotary worm-wheel *h*₁ in mesh with the worm on the shaft *h*, and on an arbor *h*₂ carrying a dial-finger *h*₃, and protractor G supported adjacent to the dial-finger *h*₃, substantially as and for the purpose set forth.

No. 31,872. Flue Cleaner.

(*Nettoyeur de carneaux.*)

John T. Mead, John Thomson and James P. Swain, Cleveland, Ohio, U.S., 1st August, 1889; 5 years.

Claim.—1st. In a flue-cleaner, the combination, with a central rod and arms, substantially as indicated, pivoted at their rear ends to the said rod, and supported upon yielding bearings near the front ends of ribs extending spirally in opposite directions from each arm, each rib having a scraping-edge adapted to fit a flue of given size, substantially as set forth. 2nd. In flue-cleaners, the combination, with a central rod having a series of projections on its front end, of arms pivoted at their rear ends to said rod, and provided with scraping ribs extending spirally in opposite directions from each arm, and springs interposed between the projections on the rod, and the arms for yieldingly supporting the free ends of the latter, substantially as set forth.

No. 31,873. Cash Delivering Device.

(*Appareil à livrer la monnaie.*)

Sidell E. Fish, Greenport, and Eugene Pearl, New York, N.Y., U.S., 1st August, 1889; 5 years.

Claim.—1st. The change delivering device constructed, substantially as described, of an extended inclined chute having a cash receiving opening at its upper end, in combination with a spring actuated door closing its lower end, substantially in the manner and for the purpose herein set forth. 2nd. In a change delivering device, the combination, substantially as set forth, of the inclined chute having a cash receiving opening at its upper end, the spring actuated door closing its lower end, and the actuating cord extending from the door to a point at or near the receiving end of the chute. 3rd. The combination in a portable change delivery device, substantially as set forth, of the hopper A, the inclined chute B projecting beyond its supports at its lower end D, the door E closing an opening in said lower end, the spring F actuating the door to close it automatically, the hand piece H projecting from the door, and the tray G beneath the door.

No. 31,874. Draft Spring. (*Ressort de traction.*)

Edward L. Hilderbrand, Henry Rost and Charles L. Davis, Sullivan, Ind., U.S., 1st August, 1889; 5 years.

Claim.—1st. The combination, in a draft evener of the sleeve designed to be secured to a shaft, and provided at its front end with a rectangular opening, a draft bar rectangular in cross section terminating at its front end in a trace hook, which is bent laterally at an angle to the shank, and a spring interposed between the front of the sleeve and the rear end of the shaft, substantially as and for the purpose described. 2nd. A draft evener comprising the base plate, the sleeve secured thereto and provided at its front end with a rectangular opening, the draft bar rectangular in cross section and having a trace hook *e* at its front end, and extending out at right angles to said bar, and provided back of said trace hook with an annular flange, and a spring interposed between the rear end of the draft bar and the front of the sleeve, substantially as described.

No. 31,875. Life Saving Apparatus.

(*Appareil de sauvetage.*)

Samuel Pemberton and Alexander M. McKay, Alpena, Mich., U.S., 1st August, 1889; 5 years.

Claim.—1st. A life preserver adapted to be worn beneath the clothing, consisting of two hollow belts communicating with each other by two or more hollow bands and a hollow bulb for inflating the same, substantially as described. 2nd. In a life preserver consisting of two hollow belts, with two or more connecting hollow bands, an inflating bulb provided with two valves, and an independent locking valve with thumb screw, substantially as described. 3rd. In a life preserver consisting of hollow belts and bands, adjustable shoulder straps attached to the upper belt, also a discharge valve with a thumb screw for locking the same when the belts are inflated, substantially as described. 4th. In a life preserver, the combination of an inflatable harness consisting of hollow belts, and bands freely intercommunicating, a hollow bulb with valves, and lock valve with thumb screw, a discharge valve with thumb screw, upper belt provided with shoulder straps, two belts provided with spring hooks and eyes for fastening and adjustable straps attached to said hooks, substantially as and for the purposes represented and described.

No. 31,876. Combination Lock.

(*Serrure à combinaison.*)

Irvine A. Shaw, Kinsley, Kan., U.S., 1st August, 1889; 5 years.

Claim.—1st. The combination, with a sliding bolt having a longitudinally extending slot, and a circular opening communicating with the inner end of said slot, of a shaft having a flat part, a circular tumbler having a slot receiving said flat part and turning in said circular opening, whereby, when said flat part and tumbler slot are perpendicular to the bolt slot, the bolt will be locked, and when turned flatwise into the plane of the bolt slot, the bolt may be retracted, said tumbler sliding with the bolt, substantially as set forth. 2nd. In a combination, lock, the combination with a locking bolt provided with a circular slot connecting with a longitudinal slot, of a shaft provided with knobs and having a flat part, a tumbler held on the said flat part and fitting into the circular slot of the locking bolt, a ratchet wheel held on the said shaft and turning with it, and a spring engaging with its free end the teeth of the said ratchet wheel, substantially as shown and described. 3rd. In a combination lock, a locking bolt provided with a circular slot continuing into a longitudinal slot, and a knob shaft provided with a pin for operating said locking bolt, in combination with a shaft provided with a knob on the inside and on the outside of the door, and also having a flat part adapted to engage the longitudinal slot of the said locking bolt, a slotted tumbler held on the said flat part and fitting into the circular slot of the said locking bolt, a ratchet wheel held on and turning with the said shaft and provided with a space in its periphery, said space being formed by the breaking out of several teeth, and a spring engaging with its free end the teeth and space of the said ratchet wheel, substantially as shown and described. 4th. In a combination lock, a locking bolt provided with a circular slot continuing into a longitudinal slot, and a knob shaft provided with a pin for operating said locking bolt, and a spring bearing against said locking bolt, in combination with a shaft provided with a knob on the inside and on the outside of the door, and also having a flat part adapted to engage the longitudinal slot of the said locking bolt, a slotted tumbler held on the said flat part and fitting into the circular slot of the said locking bolt, a ratchet wheel revoluble on the said shaft and provided with a space in its periphery, said space being formed by breaking out several teeth, a knob screwed on the shaft against said ratchet wheel and clamping it in place, and a spring engaging with its free end the teeth and space of the said ratchet wheel, substantially as shown and described.

No. 31,877. Joint for Folding Chairs.

(*Joint pour fauteuils pliants.*)

Ausborn F. Old, Brooklyn, N.Y., U.S., 1st August, 1889; 5 years.

Claim.—The herein described pivot for folding chairs consisting of two plates E, F, having projecting ears therefrom, by which the plates may be secured the said plates, constructed the one with a central stud to form the pivot, and the other with a corresponding central recess to form the seat for the pivot, one plate constructed with studs L, M on its face, the other plate constructed with recesses J, K concentric to the pivot, and corresponding to the said two studs L, M, the end of the said recesses forming respectively shoulders *a, b*, against which the said studs may come to a bearing, substantially as described.

No. 31,878. Wax end Needle.

(*Soie métallique de fil poissé.*)

John T. Smith, Bellevue, Mich., U.S., 1st August, 1889; 5 years.

Claim.—1st. As an improved article of manufacture, the metallic bristle for the purpose set forth, made of a single piece of wire which is bent upon itself and twisted to form an eye at one end, the ends of the wire forming the point of the bristle being connected to each other by solder. 2nd. A metallic bristle made up of a single piece of wire, which is bent upon itself and twisted, said bristle having two or more eyes formed in the body portion, the ends of the wire being secured to each other by solder or equivalent material, and pointed, substantially as and for the purpose specified.

No. 31,879. Fifth Wheel and Friction Plate of Vehicle. (*Rond d'avant-train et plaque de frottement de voiture.*)

Alexander Smith, London, Ont., 1st August, 1889; 5 years.

Claim.—As an improvement in fifth wheels and friction plates of vehicles, the above described method of attaching the upper and lower plates D, A centrally by means of double projection B on lower plate A, which is received in double socket C in upper plate D, through which a centre bolt passes, and is attached directly to the spring or to the axle, substantially as shown and specified.

No. 31,880. Harrow. (*Herse.*)

Thomas Bellaire, Belle River, Ont., 1st August, 1889; 5 years.

Claim.—1st. In combination with a disk harrow, the spindles carrying disk G being placed one forward of the other, and with their inner ends overlapping, for the purposes hereinbefore set forth. 2nd. In combination with a disk harrow, the rods J¹ and J² with their rear ends in connection with the disk spindles, and the forward ends of each pair connected by a chain M passing over a draw block L, substantially as and for the purposes hereinbefore set forth. 3rd. In combination with a disk harrow, the lever K passing through a slot in the tongue A and pivoted therein, the lower end of the lever being connected to the forward ends of the inner rods J, J¹, substantially as described and for the purposes specified. 4th. The combination, in a disk harrow, of the arm B provided with a collar bolt E, the clips G having recesses for the reception and oscillation of collar bolt E, substantially as described and for the purposes set forth. 5th. The combination, in a disk harrow, of the weighted lever arm O, pivoted to arm B connected by the chain R to the disk I on the outer end of spindle, substantially as and for the purposes specified.

No. 31,881. Street or Station Indicator.

(*Indicateur de rue ou de station.*)

William P. Williams, William P. Johnson and Arthur Crandell, Chicago, Ill., U.S., 1st August, 1889; 5 years.

Claim.—1st. A street or station indicator consisting of a case A, and a revoluble displaying drum journalled within said case, and consisting of a central shaft *b*, disks *a, a'* mounted upon said shaft, and provided with seats upon their inner surfaces, rods *e* of flexible material having their ends sustained within said seats, whereby said rods may be readily sprung into and out of place and display sheets attached to said rods, substantially as described. 2nd. A street or station indicator consisting of an inclosing case A, a revoluble display drum journalled within the upper part of said case, and provided with an annular series of dependent flexible display sheets, said sheets being loaded at their lower ends, and a spring actuated swinging bar resting upon said sheets and connected by a pivotal joint to the inside of the case, and engaging consecutively the weighted ends of the display sheets, substantially as described. 3rd. A street or station indicator consisting of an inclosing case A having a glass door at its lower part, and a revoluble display drum journalled within its upper part, said drum consisting of a central shaft *b*, disks *a, a'* mounted upon said shaft and provided with annular seats upon their inner surfaces, rods *e* of flexible material having their ends sustained within said seats, display sheets loaded at their lower ends and attached to said rods, a swinging bar connected by a pivotal joint to the inside of the case and resting upon said sheets, and a spring *k'* intermediate between said bar and case, substantially as described. 4th. A street or station indicator consisting of an inclosing case A, and a revoluble display drum journalled within said case, and composed of a central shaft *b*, disks *a, a'* mounted upon said shaft, one of said disks having upon its periphery a series of ratchet teeth, a sliding bar J journalled within said case and projecting therefrom, said bar being provided with a spring pawl engaging with the ratchet teeth, and with stops for limiting its throw, and display sheets dependent from the drum, substantially as described. 5th. A street or station indicator consisting of an inclosing case A, a revoluble display drum journalled within said case, and composed of a central shaft *b*, provided with a series of longitudinal grooves or channels, disks *a, a'* secured to the ends of said cylinder, and having on their inner surfaces respectively annular seats and flexible rods *e* adapted to lie within the grooves of the cylinder and have their ends secured in said seats, substantially as described.

No. 31,882. Liquid Counter.

(*Mesureur de liquides.*)

François Lauzier, St. Germain de Rimouski, Qué., 1st August, 1889; 5 years.

Résumé.—Dans un mesureur des liquides, la combinaison du tube A, ouvert à l'atmosphère à son extrémité supérieure, les côtés H, H', le repile D, les barres transversales C, le coude B, et les robinets E et F, le tout tel que décrit et pour les fins mentionnées.

No. 31,883. Snow Plough. (*Charrue à neige.*)

Oren Williams, Gouverneur, N.Y., U.S., 1st August, 1889; 5 years.

Claim.—1st. In a snow-plough, the combination, with a pocketed wheel, of horizontal conveyors, and an essentially vertical conveyor located between the horizontal conveyors, substantially as shown and described. 2nd. In a snow-plough, the combination, with a pocketed wheel, of horizontal conveyors arranged end to end, and an essentially vertical conveyor between the opposing ends of the said horizontal conveyors, substantially as and for the purpose specified. 3rd. In a snow-plough, the combination, with a pocketed wheel, of horizontal conveyors arranged end to end, a vertical conveyor located between the ends of the horizontal conveyors, and an inclined conveyor hinged to, and driven from the vertical conveyor, as and for the purpose specified. 4th. The combination, with a pocketed wheel and discharge plates pivoted in the pockets of said wheel, of horizontal conveyors arranged end to end, one having a right-hand and the other a left-hand pitch, a vertical conveyor journaled between the approaching ends of the horizontal conveyors, an inclined conveyor attached to and driven from the vertical conveyor, and a hopper adapted to receive the contents of the pockets and deliver the same to the conveyors, substantially as shown and described. 5th. The combination, with a pocketed wheel, a discharge-plate pivoted in each of the pockets provided at its free end with outwardly-extending pins, and a stationary trip-plate provided with a cam-surface adapted for contact with said pins, of horizontal conveyors arranged end to end, one having a right-hand, and the other a left-hand pitch, a vertical conveyor journaled between the approaching ends of the horizontal conveyors, an inclined conveyor attached to, and driven from the vertical conveyor, and a hopper adapted to receive the contents of the pockets and deliver the same to the conveyors, substantially as shown and described. 6th. The combination, with the frame, of a snow-plough, a wheel journaled in the forward end of the frame, provided with end flanges having radial slots therein, transverse partitions located at the rear of each slot dividing said wheel into pockets, a discharge-plate pivoted in each pocket above the partitions, and pins secured to the free ends of the plates and passing through said slots, of a stationary trip-plate attached to the frame, provided with a circular upper cam-surface adapted for contact with the pins of the discharge-plates, substantially as shown and described. 7th. The combination, with the frame of a snow-plough, a wheel journaled in the forward end of the frame provided with end flanges having radial slots therein, transverse partitions located at the rear of each slot dividing said wheel into pockets, a discharge-plate pivoted in each pocket above the partitions, and pins secured to the free ends of the plates and passing through said slots, of a stationary trip-plate attached to the frame, provided with a circular upset cam-surface adapted for contact with the pins of the discharge-plates, approaching horizontal conveyors journaled to the rear of the wheel, a combined vertical and inclined conveyor journaled between the approaching ends of the horizontal conveyors, and a hopper adapted to receive the snow from the discharge-plates and deliver the same to the conveyors, substantially as and for the purpose specified.

No. 31,884. Window Screen. (*Store de fenêtre.*)

William J. Horton, Halifax, N.S., 2nd August, 1889; 5 years.

Claim.—1st. The combination, with window frame and window, of the vertical metallic rods *a, a*, of the lower folding screen, of the said screen *b*, of the recessed sliding cross-bar *d*, and of the notched metallic catches *c, c*, substantially as and for the purposes hereinbefore set forth. 2nd. The combination, with window frame and window, of the vertical metallic rods *a, a*, of the upper folding screen, of the said screen *b*, and of the recessed sliding cross-bar *h*, substantially as and for the purpose hereinbefore mentioned.

No. 31,885. Machine for Sifting or Sorting Grain or Ground Materials or the like. (*Machine à tamiser ou trier les grains ou les matières moulues, ou autres.*)

Hugo Graepel, Budapest, Hungary, 2nd August, 1889; 5 years.

Claim.—1st. In machines for sifting or sorting grain and ground materials, the combination of the following elements, a central rotating axis *A*, two or more sifting chambers equally disposed around same divided by boards *C*, or the like, and having their sides formed of riddles or sieves *B*, ante-chamber *D* communicating with sifting chambers, feed hopper *E*, discharge ports *F*, guide boards *Y* and suitable receptacles, all substantially as herein described and for the purpose set forth. 2nd. In machines for sifting and sorting grain and ground materials, the combination of two or more chambers having their sides *B* formed of riddles or sieves of differing fineness mounted equally upon a central axis, and rotated in any suitable way, ante-chamber *D* into which feed is led, communicating with first chamber, small boxes, as *L, O* and *Q*, communicating with other chambers, inlets into same, and guide boards *J, R* and *S* carrying material to same from sieves of preceding chambers, and suitable discharge pipes and receptacles, all substantially as herein set forth.

No. 31,886. Railway Signal.*(Signal de chemin de fer.)*

Walter Thompson, Orange, N.J., U.S., 2nd August, 1889; 5 years.

Claim.—1st. The improved electric signal combining with a suitable signalling mechanism, a signal circuit, a track circuit controlling the action of the signal circuit and adapted to be controlled by the train, and a replacing or resetting circuit, the said circuits being controlled by a single battery, substantially as and for the purposes set forth. 2nd. In combination with a railway and signal, a circuit *b* adapted to be closed by the passage of the train, an electro-magnet *g*, a stay armature *h* arranged in connection with the magnet *g*, and adapted to hold a signal circuit normally open, and a replacing or resetting circuit adapted to operate to bring the apparatus to a normal

position, substantially as and for the purposes set forth. 3rd. In combination with a railway rail, a circuit closer *f* arranged on the circuit *b* near said rail, an electro-magnet *g* also on said circuit *b*, an armature *h*, an armature *j* adapted to connect the terminals of a signal circuit, and to be held disconnected from said terminals by said armature *h*, an electro-magnet *k* arranged on a replacing or resetting circuit *bx*, a circuit closer *g'* and a signal circuit and signal, and a battery, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

No. 31,887. Rail Road Car.*(Char de chemin de fer.)*

George M. Pullman, Chicago, Ill., U.S., 2nd August, 1889; 5 years.

Claim.—1st. The combination, substantially as hereinbefore set forth, of the adjacent ends of the superstructures of two cars of a train, with a spring-coupler, substantially as set forth, whereby the tendency of such superstructures to oscillate is checked, and a constant force to restore proper alignment of the car-bodies, is obtained. 2nd. In the construction of railway cars, springs connecting adjacent ends of the cars of a train that are located at or near the tops thereof, and secured by mechanism that will admit of coupling the parts belonging to one car with, or uncoupling from the parts belonging to another car, which springs yield to flexion as a result of oscillation or swaying of the cars, whereby the resistance of said springs to such flexion operates to restrain the oscillatory or swaying motion of the cars, substantially as set forth. 3rd. The combination, with a train of cars, of springs connecting adjacent ends of cars located at or near the roofs or tops thereof, and secured by mechanism that will admit of coupling the parts belonging to one car with or uncoupling from the parts belonging to another car, which springs yield under tensile strain as a result of oscillation or swaying of the cars, whereby the resistance of said springs to such tensile strain operates to restrain the oscillatory or swaying motion of said cars, substantially as set forth. 4th. In the construction of railway passenger cars, brackets *b* and *b'* secured to the car-roof on opposite sides of a central longitudinal line from that of the opposite end of the car, brackets *a*, also secured on opposite sides of a central line at the respective ends of a car, in combination with spiral springs *c* and *c'*, which latter are respectively hinged to the brackets *b* and *b'*, and their opposite ends adapted to bear against brackets *a* and *a'*, substantially as described. 5th. In the construction of railway-coaches, springs *h*, one of which is provided on each end of a car at or near the top thereof, and on opposite sides of a central longitudinal line or said car, said springs being provided with a coupling shank and head *s*, in combination with clutches *j* likewise located at each end of the car in positions to couple with said springs when the cars are brought together, substantially as set forth. 6th. In the construction of railway cars, springs *h* attached to the several cars of a train at the roof or ends of said cars that are provided with suitable shanks and coupling heads, in combination with clutches *j* upon adjacent cars, which latter are provided with cams *u* for opening the jaws of said clutches preparatory to coupling, substantially as described.

No. 31,888. Snow Plough. (*Charrue à neige.*)

John Vincent, Houlton, Me., U.S., 2nd August, 1889; 5 years.

Claim.—1st. The snow plough having the base *A* and top *C*, in combination with the vertical cutters *K*, the bolt-rod *O* and the brace-rods *N*, substantially as described. 2nd. The combination, in a snow plough, of the base *A*, the top *C*, the vertical cutters *K*, the brace-rod *B* and having the ears *N*, the diagonal brace-rods *R*, and the bolt-rod *O*, said bolt-rods having the clamping nuts for the purpose set forth, substantially as described.

No. 31,889. Spring Vehicle. (*Voiture à ressorts.*)

Henry W. Pell, Roue, N.Y., U.S., 2nd August, 1889; 5 years.

Claim.—1st. The spring *S* having the abrupt upwardly bent attaching crank *a*, constructed as and for the purpose set forth. 2nd. The spring *S* formed with the the abrupt upwardly bent crank *a*, and with the eyes *e, e*, all constructed as and for the purpose set forth. 3rd. The combination, with an axle *A* and brackets *B*, of the springs *S* having the abrupt upwardly turned crank *a, a*, substantially as and for the purpose set forth. 4th. The combination, with the axle *A*, and brackets *B, B*, of springs *S, S* having the abrupt upwardly turned cranks *a, a*, and eyes *e, e*, and coupling bolts *c, c*, substantially as and for the purpose set forth. 5th. In combination, the springs *S, S*, the saddle *D*, the trusses *f, f*, pivotal bearings *h*, and fifth-wheel sections *i, i*, substantially as described and shown. 6th. In combination, the cross-springs *S, S*, the saddle *D*, the central arch *l*, the trusses *f, f*, the pivotal bearings *h*, the arms *o, o* and the fifth-wheel section *i, i*, substantially as described and shown.

No. 31,890. Lock for Shut-off Valves.*(Fermeture pour soupapes d'arrêt.)*

George B. Haines, Chicago, Ill., U.S., 2nd August, 1889; 5 years.

Claim.—1st. In a lock for shut-off valves, the combination, with the inclosing shell provided on one side with a chambered projection, as described, of a plug-valve having apertures stopping short therein, locking-bolts divided into two parts of unequal length, and extending from the inclosing shell into the plug-valve, and the springs inserted in the apertures in the plug and back of the locking-bolts, substantially as and for the purpose set forth. 2nd. In a lock for shut-off valves, the combination, with a plug-valve and the inclosing shell, of the locking-bolts *D, D* divided into two parts of unequal length, the shorter or outer members terminating in conical ends, and the key *F* provided with shoulders in different planes, as described, which engage with the conical ends of said bolts, and bring the line of separation into the plane dividing the valve-chamber, substantially as and for the purpose set forth. 3rd. In a lock for shut-off valves, the combination, with the inclosing shell or chamber provided

with the stop-lug *d*, of the plug-valve provided with the stop-pin *d*, substantially as and for the purpose set forth. 4th. In a lock for shut-off valves, the combination, with the shell or chamber provided with the segmental recess *g*, of the plug-valve, the inner members of the locking bolts inserted in said valve and the springs for throwing said bolts into said recess, whereby the valve is locked in an open position, substantially as and for the purpose set forth. 5th. The combination, with the valve-chamber provided with the segmental recess *g*, the valve, the locking bolts inserted therein, the spring-seated back of said bolts, the key *H* provided with pins *h*, *h*₁, and the apertures *h*₂, *h*₃ in the inclosing shell, substantially as and for the purpose set forth.

No. 31,891. Hot Water Heater.

(*Calorifère à eau.*)

Edward Gurney, Toronto, Ont., 2nd August, 1889; 5 years.

Claim.—1st. A hot-water heater composed of hollow sections formed with heating-spaces between the water-spaces of the sections, and communicating with water-spaces formed around the doors of the heater, and with water-spaces formed in the sections surrounding the ash-pit, and the several sections connected together by the vertical legs *B* connected to, and forming part of the water-spaces, substantially as and for the purpose specified. 2nd. A hot water heater composed of detachable sections formed with vertical legs *B*, and with lugs *a* arranged in the bends formed by the legs *B*, substantially as shown and described and for the purpose specified. 3rd. A hot-water heater composed of hollow sections communicating with a hollow section surrounding the ash-pit, and forming an integral part of the water space in the heater, substantially as and for the purpose specified. 4th. A hot-water heater composed of hollow sections communicating with water spaces around the doors of the heater, and constituting an integral part of the water spaces in the heater, substantially as and for the purpose specified. 5th. A hot-water heater composed of hollow sections communicating with water spaces formed around the doors of the heater, and with water spaces formed in the sections surrounding the ash-pit, substantially as and for the purpose specified. 6th. A hot-water heater having a hollow section formed around the ash-pit, and communicating with all the water spaces in the heater, in combination with the return pipe communicating with the hollow section surrounding the ash-pit, so that the water shall enter the heater at the point specified.

No. 31,892. Lock and Latch for Doors and the like. (*Serrure et loquet pour les portes et autres choses semblables.*)

William Kneen, Wolverhampton, Eng., 2nd August, 1889; 5 years.

Claim.—1st. In latches for doors and the like, a latch bolt *A* arranged so as to project from the edge of the door into its engaging position by gravity, or by running down an incline, substantially as hereinbefore described and illustrated. 2nd. For operating latch bolts, acting substantially as hereinbefore described and claimed, a rod or rods acting as a lever or levers, and actuated by a pusher when the handle or knob is grasped, substantially as hereinbefore described and shown in Figs. 1, 2, and 3, and in Fig. 4 of the accompanying drawings. 3rd. In combination with latch bolts protruded by running down an inclined plane, as hereinbefore described, a projection (or the equivalent), on the latch bolt acted upon by a lever secured to a spindle furnished with knobs or handles to be operated by partial rotation, substantially as hereinbefore described and illustrated in Figs. 5 and 6 of the accompanying drawings. 4th. In combination with latch bolts protruded by gravity, or by running down an inclined plane, the lever *K* acted upon by the lever *J* and connected to the latch bolt, substantially as hereinbefore described and illustrated in Fig. 6. 5th. In and for locks, a lever or tumbler, or levers or tumblers by which the bolt is locked, the said lever or tumbler, or levers or tumblers, having each formed on or fixed to it a weight, substantially as and for the purposes described and shown in Fig. 6.

No. 31,893. Device for Transmitting Power.

(*Appareil de transmission de la force.*)

Timothy W. Lemieux, Duluth, Minn., U.S., 2nd August, 1889; 5 years.

Claim.—1st. In a device for transmitting a reversible motion to a car from a continuous running cable, the combination, with a shaft journaled below the car body, a hub on said shaft having radial pivot bolts *D*, bevel gears *A* mounted thereon, of band wheels *B* and *F* cogged on their inner surface, and means for operating the wheel *B*, substantially as shown and described. 2nd. The band wheels *B* and *F* having internal gears and circumferential flanges, substantially as and for the purpose described. 3rd. In a device, substantially as described, for transmitting a reversible motion, the band wheel *B* provided with an internal bevelled cog gear, a brake flange *e*, and a groove *e*₁, substantially as and for the purpose described. 4th. The combination, with the brake band wheels *B* and *F*, of the brake bands *K*, *K*₁, substantially as described. 5th. The combination of the axle *E*, the arms *C*, *C*₁, pivotally supported on the axle, said arms having cable supporting sheaves *C*, *C*₁, and means for operating the arms, substantially as described.

No. 21,894. Cable Grip. (*Lien de câble.*)

Timothy W. Lemieux, Duluth, Minn., U.S., 2nd August, 1889; 5 years.

Claim.—1st. The combination, with the slotted standard *A*, and the sheave *C*, of the brake *O*, *P*, and lever *R*, substantially as described, and the cable lifting device as shown. 2nd. The combination, with the brake *O*, *P*, of the sheave *C* having bevel bearing faces *i*, *i*, substantially as shown and described.

No. 31,895. Combination Lock Hinge.

(*Penture-arrêt à combinaison.*)

Martin A. Cutter, Allegheny, Penn., U.S., 2nd August, 1889; 5 years.

Claim.—1st. A window-blind hinge consisting of parts *B* and *B*₁, pintle *b* and locking plate *D*, all formed and combined as and for the purpose hereinbefore set forth. 2nd. A window blind hinge consisting of parts *B* and *B*₁, pintle *b* and locking plates *D* and *D*₁, all formed and combined as and for the purpose hereinbefore set forth.

No. 31,896. Attachment to Lawn Mowers.

(*Disposition aux faucheuses de pelouses.*)

Frank A. DeLand, Memphis, Mich., U.S., 2nd August, 1889; 5 years.

Claim.—1st. The combination of a lawn-mower and grass collecting receptacle secured in rear thereof, of a shield extending rearwardly from the knife bar into said receptacle, and above the bottom thereof, substantially as described. 2nd. In an attachment to lawn-mowers, the combination of the grass collecting receptacle *E*, and the shield *F* extending from the rear edge of the stationary knife bar *B* into the grass receptacle, and above the bottom of the same, substantially as described.

No. 31,897. Attachment to Lawn Mowers.

(*Disposition aux faucheuses de pelouses.*)

Frank A. DeLand, Memphis, Mich., U.S., 2nd August, 1889; 5 years.

Claim.—1st. In an attachment to lawn-mowers, a flexible receptacle consisting of a skeleton frame, of spring wire having the means for attaching it to the lawn-mower and covered with a fabric, substantially as described. 2nd. In an attachment to lawn-mowers, a flexible receptacle consisting of a skeleton spring wire frame, of the loops *A* and *B* connected by transverse and diagonal bars, substantially as described, and with the projecting ends *C* and *D*, and of an outer covering of fabric, substantially as and for the purpose described. 3rd. In an attachment to lawn-mowers, the combination, with a collecting receptacle secured in rear of the cutting knives, of a comb *O* secured to the stationary knife bar in advance of the knives, and adapted to operate, substantially as and for the purpose described.

No. 31,898. Rotary Pump. (*Pompe rotative.*)

Oswald Seifert, San Francisco, Cal., U.S., 2nd August, 1889; 5 years.

Claim.—1st. In a rotary pump, the combination of case or chamber *A*, piston *B*, with piston shaft *H* placed eccentrically in the chamber, the passage and passages *A*₆, *A*₇ above and below the line of the piston shaft, and the cylinder *D*, substantially as described. 2nd. In a rotary pump, the combination, with a rotating piston bearing folding rings and set eccentrically in a cylindrical chamber, as described, of a loose revolving ring concentric with the chamber and enclosing the piston and guide wheels, or rollers *E*, *E*, substantially as described. 3rd. The pump case, having cylindrical piston chamber *A*, and roller chambers *E* over it on opposite sides of the centre in which are roller bearings *f*₂, as described. 4th. The herein described pump consisting of the stationary case having piston chamber *A*, roller chambers *E*, *E*, inlet and discharge parts and passages *A*₆, *A*₇, the ring *D*, and guide wheels *E*, *E*, constructed for operation as set forth.

No. 31,899. Sleigh Runner Attachment for Wheeled Vehicles. (*Patin de traîneau mobile pour les voitures à roues.*)

David G. Wyeth, Newark, Ohio, U.S., 2nd August, 1889; 5 years.

Claim.—1st. A sleigh-runner attachment for wheeled vehicles consisting of the clamp *C*, the packing *R*, two side-plates *P*, one of said side-plates having the pivotal point *i* and both having flanges *f*, the knees *k*, *k* and rave *r* unmortised and untenoned, all formed, arranged and combined as and for the purpose hereinbefore set forth. 2nd. A sleigh-runner attachment for wheeled vehicles consisting of the clamp *C*, the packing *R* and the side-plate *P* having the pivotal point *i*, all formed, arranged and combined as and for the purpose hereinbefore set forth. 3rd. A sleigh-runner attachment for wheeled vehicles consisting of the clamp *C*, the packing *R*, the side-plate *P*, having the pivotal point *i*, the braces *b*, *b*, *b*, *b*, and the thimble *s* having the lugs *l*, *l*, all formed, arranged and combined as and for the purpose hereinbefore set forth. 4th. In a sleigh-runner attachment for wheeled vehicles, the combination, of the thimble *s* having lugs *l*, *l* and annular grooves *g*, *g*, the packing *n*, *n*, and the braces *b*, *b*, *b*, *b*, all substantially as set forth for the purpose specified.

No. 31,900. Spring Teeter Gear for Children's Carriages. (*Train de voiture d'enfant à ressorts oscillants.*)

Henry G. Portmann and William W. Portmann, St. Louis, Mo., U.S., 2nd August, 1889; 5 years.

Claim.—1st. In a child's carriage, the arch-bars 3, 3, having foot clamps 4 provided with lugs 5 and 6, and side bars 7, as set forth. 2nd. The combination of the arch-bars 3, 3, having foot clamps 4, provided with bed plates 8 and lugs 5, 6, as set forth. 3rd. The combination of the arch-bars 3, 3, spring bars 14, teeter springs 29, elliptic spring 18 and side bars 7, as set forth. 4th. The combination of the arch-bars 3, 3, having foot clamps 4, provided with lugs 5, side bars 7, spring bars 14, spring 18 and teeter springs 29, as set forth.

No. 31,901. Brake. (*Frein.*)

Arthur H. Wilson and James V. S. Barret, St. Louis, Mo., U.S., 2nd August, 1889; 5 years.

Claim.—1st. In a brake, the combination of a pair of pivoted jaws or grips *h*, a brake shoe or block *d*, and a lever or beam *b*, substan-

tially as and for the purpose hereinbefore described. 2nd. In a brake, the combination of the pivoted grips *h*, having arms *f*, with the brake shoe or block *d*, and lever or beam *b*, substantially as and for the purpose hereinbefore set forth. 3rd. In a brake, the combination of the pivoted grips *h*, having arms *f*, brake shoe or block *d* and lever or beam *b*, with spring *j*, substantially as and for the purpose hereinbefore described.

No. 31,902. Thill Coupling. (*Armon de limonière*)

Simon B. Castle and Henry C. Bradshaw, Syracuse, N. Y., 2nd August, 1889; 5 years.

Claim.—1st. In a thill coupling, a thill iron provided with a coupling pin, having on one end a head and a flattened neck, substantially as described. 2nd. In a thill coupling, a thill iron provided with a coupling pin having a head and flattened neck, an axle iron provided with a seat for the coupling pin and its neck, and open on top, a spring having one end secured by the clip arms, and a lock-piece pivoted upon the axle iron, substantially as described. 3rd. The combination, with a coupling pin seated in the axle iron, of a spring secured upon the axle clip arms, and a bevelled lock piece pivoted to the axle iron, substantially as described.

No. 31,903. Swivel. (*Émérillon*.)

The Oneida Community, Community (assignee of Harry E. Kelly, Niagara Falls), N. Y., U. S., 2nd August, 1889; 5 years.

Claim.—In a swivel, the combination, with the headed member, of the sleeved member formed with the yoke, a semi-cylindrical sleeve portion *c* on the ends of said yoke, and axially in line with the article to which it is attached, and clinching prongs *c*, *c* extending from the sleeve portion *c*, and adapted to fold around the neck portion of the aforesaid headed member, substantially as described and shown.

No. 31,904. Hot Air Drum. (*Poêle sourd*.)

James Hodgkinson, Moorhead, Minn., U. S., 2nd August, 1889; 5 years.

Claim.—1st. A hot air drum, in combination with a smokepipe connecting a stove on a lower floor and said drum, and a fresh air tube longitudinally extending through a portion of said pipe, and communicating with the atmosphere of the lower floor and opening into said drum, substantially as described. 2nd. A hot air drum having a passage for the hot products of combustion therethrough, and a fresh air heating chamber therein, having hot air outlets, in combination with a smoke pipe connecting a stove and said passage of the drum, and a fresh air pipe longitudinally located in said pipe, and communicating with the atmosphere at one end, and opening into the fresh air heating chamber of the drum at its other end, substantially as described. 3rd. A hot air heating drum, comprising an outer casing, through which the products of combustion from a stove pass, a fresh air heating chamber in the casing, having fresh air induction openings, and hot air eduction openings and hollow supporting legs for the drum opening into said induction openings, and through which fresh air is supplied to the same, substantially as described. 4th. A hot air heating drum comprising an outer casing, an interior cylinder forming upper and lower spaces communicating by vertical flues outside of the cylinder and inside of the casing, an inner cylinder in the interior cylinder, the interior of the two cylinders communicating, a smoke pipe opening into said lower space, an exit pipe from said upper space, fresh air tubes extending through the casing and said lower space into the interior cylinder, hot air exit tubes extending from the interior cylinder through said upper space to the outer air, and a fresh air tube extending through a portion of the smoke pipe and lower space into the inner cylinder, substantially as described. 5th. In an air heating drum, the combination of an outer casing, oval in cross section, and an interior cylindrical casing shorter than the outer casing, and of a diameter equal to the lesser inner diameter of the outer casing, thereby forming smoke chambers in the ends of the outer casing, connected by two passages formed by the walls of the inner and outer casings, the inner casing being provided with fresh air inlets and heated air outlets, substantially as described. 6th. In an air heating drum, the combination of the outer casing, the interior casing forming an air heating chamber, and the inner cylinder within the interior casing forming an inner air-heating chamber communicating therewith, substantially as described. 7th. In an air-heating drum, the combination of an interior air-heating chamber, a cylinder within said chamber, forming an inner air-heating chamber, communicating with the outer air-heating chamber, and a deflector in the top of said cylinder to deflect the hot air laterally into said outer chamber, substantially as described.

No. 31,905. Seeding Attachment for Disk Harrows. (*Semoir pour les herses en disques*.)

Jonathan J. Rogers and Oliver S. Kennedy, Ft. Worth, Texas, U. S., 2nd August, 1889; 5 years.

Claim.—The combination of the axles, having their outer ends journalled in stationary, and their inner ends in longitudinally-adjustable bearings, and provided with the harrow disks, the weight boxes *I* mounted on vertical standards above said axles, and having rearward extending arms or braces, the seed boxes mounted upon said braces above and in rear of the weight boxes, and having downwardly extending forwardly curved drill tubes, the adjustable seed slides, the rock-shaft having fingers or agitators, and the pitman connecting cranks upon the rock shafts with cranks upon the axles, substantially as set forth.

No. 31,906. Appliance for Skidding Saw Logs. (*Appareil pour entrayer les billots*.)

William W. Williams, Houghton, Ont., 2nd August, 1889; 5 years.

Claim.—1st. The application of the lifting chain *C* in the form and manner presented to the skidding of saw logs, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the skidding *A*, *A* and the lifting chain *C*, with the lever *H* and derrick *F*, (by means of the pulley *D* and snatch block *B*), the logging chain *G* and the oxen or horse power thereto attached, substantially as and for the purposes hereinbefore set forth.

No. 31,907. Hame Lock or Fastener.

(*Couplière d'attelles*.)

Angus G. McLeod, Hallock, Minn., U. S., 2nd August, 1889; 5 years.

Claim.—1st. The herein described hame lock or fastener, composed of the clip having a hook at each end, and a slot at one end, the upper end of the slot being enlarged, the hinged clamp consisting of the plate having one end bent, substantially at right angles, and having a turn button at its other end, and the lever having a hook at one end and pivoted to the bent end of the plate, the hook extending in an opposite direction to the said bent end of the plate, the other end of the lever having an opening to receive the said catch, and the chain connected at its end with the clip and the said clamp, and passing through the said slot in the clip, substantially as and for the purpose described. 2nd. The combination with the clamp and the chain of the clip, having a hook at each end, and a slot at one end, which slot extends around the hook and is enlarged at one end, substantially as and for the purpose described. 3rd. The combination, with the plate *D*, having the bent end *d*, and the lever having the hook *d* pivoted to the end of *d*, of the catch or turn button *E* pivoted to *D* and adapted to pass through an opening in the free end of *D* and the clamp, all substantially as and for the purpose described.

No. 31,908. Valve for Steam Pumps, etc.

(*Soupape pour les pompes à vapeur, etc.*)

Benjamin R. Patten, Yarmouth, N. S., 2nd August, 1889; 5 years.

Claim.—1st. In a steam engine, the valve cylinder *B* having the passages *O*, and ports registering with the steam and exhaust ports of the main cylinder, substantially as herein shown and described. 2nd. The piston valve *A* working in the cylinder *B*, and on the stem *I* between the flanged heads *K*, and having formed in it the chamber *E*, the recessed back and edges of the piston valve and the ports *N* and *R*, substantially as herein shown and described. 3rd. In a steam engine, having the valve cylinder *B* and piston valve *A*, the valve stem *I* having the openings *U*, and having fixed to it the flanged heads *K*, substantially as herein shown and described. 4th. In a steam engine, the double-headed piston valve *A* provided with the packing rings *H*, recessed to receive the heads *K* on the valve stem, and having a hollow or recessed back, a central chamber to receive the valve *L*, and side passages opening from said chamber to the main cylinder *D*, substantially as herein shown and described. 5th. The slide valve *L* working on the inner face of the chamber of the piston valve *A*, and having on its outer side lugs to engage with the block *M*, on the valve stem *I*, substantially as herein shown and described.

No. 31,909. Boom. (*Estacade flottante*.)

Thomas Raftery, New York, N. Y., U. S., 2nd August, 1889; 5 years.

Claim.—1st. A gate-boom or raft-gate made in two or more parts detachably connected, consisting of buoyant sections flexibly joined, the parts capable of being swung to open or close the boom. 2nd. The combination, with abutments of a gate-boom or raft-gate consisting of buoyant sections flexibly connected, the boom being made in two parts detachably joined, each part being capable of being swung. 3rd. The combination, with a boom made in sections flexibly joined, of a supplemental cable joined to the sections, and means for pulling upon the cable, substantially as and for the purpose set forth. 4th. The combination, with a boom made in one or more parts, of chains joined by fastening in the nature of a cable-band, as shown and set forth. 5th. The combination, with an end section of a boom, of an abutment and chains and cables, the chains and cables being firmly fixed in the abutment, and each chain being attached to a log by a half-hitch and each cable by a timber-hitch, substantially as described. 6th. In a sectional boom, the combination of an end section formed of one or more logs, or bundles of logs, each provided with two perforations of an abutment and of one or more chains, each chain passing to the upper surface of the log, down through the perforation, then being formed in a half-hitch around the log, and passing on along the under surface of the log, substantially as set forth. 7th. In a sectional boom, the combination of an end-section formed of one or more logs or bundles of logs, each provided with two perforations of an abutment, and of one or more chains, each chain passing to the upper surface of the log to the second perforation, then up through this perforation, then formed in a half-hitch around the log, and passing on along the upper surface of the log, substantially as described. 8th. In a sectional boom, the combination of an end section formed of one or more logs or bundles, the logs of each section being securely lashed or banded together, each log provided with the perforations and with one more chains, each chain being securely fastened to the abutment, and passing to a ring-bolt fixed in the log, then over or under the log to the nearest perforation, then through this perforation and around the log in a half-hitch, then along the log either guided or not by the eye or ring-bolts, then through the other perforation to the opposite side of the log, then around the log in a half-hitch and then along the log to another eye or ring-bolt, substantially as described. 9th. In a boom formed of sections, the combination, with the sections, of chains and cables, the

chains being crossed, and the cables being fastened to their respective logs, substantially as described. 10th. A gate-boom or raft-gate made in one more detachable parts formed of buoyant sections flexibly joined by cables and cross-chains, the whole boom or any part capable of being swung to open or close.

No. 31,910. Machine for Transmitting Motion. (*Machine de transmission du mouvement.*)

Sanford D. Kinsey, Columbus, Mich., U.S., 2nd August, 1889; 5 years.

Claim.—1st. The combination of the plat form, the shaft F thereon, the wheel I loose on the shaft, the rigid standard L, the shaft M journalled in said standard and having the gear-wheel O engaging the wheel I, and provided further with pulleys, one or more, the standard T secured to and secured adjustable concentrically on the platform, whereby it may be arranged at any desired angle with relation to the shaft M, and the shaft W journalled in the standard T having the gear-wheel X engaging wheel I, the bearings loose on the shaft F and in which the inner ends of the shafts M, W are journalled and the pulleys, one or more, substantially as described. 2nd. The combination of the platform having the concentric slot D, the standard L, the movable standard T having the clamping-bolts working in the slot D, the central shaft F, the wheel I loose thereon, the bearings N, S loose on the shaft F, and the shaft M, W journalled in the standards L, T, and having their inner ends journalled in the bearings N, S, said shafts being provided with gears engaging wheel I and also provided with pulleys, substantially as described. 3rd. The platform having the curved slot D, the central shaft F, wheel I loose thereon, the rollers supporting the rim of the wheel, the rigid standard L, the bearing N loose on shaft F, the shaft N journalled in standard L, and bearing N, and having the gear engaging wheel I and the pulleys, the standard T, the clamping bolts working in the slot D to secure said standard to the platform at any desired adjustment, the bearing S loose on shaft F, the shaft W journalled in standard T and in bearing S, and having the wheel X engaging wheel I and the pulleys, substantially as described. 4th. In combination with the toothed wheel I, the rollers H for supporting the same by bearing on the under side thereof, the shaft F on which the wheel I is loosely mounted, the shaft W, the gear-wheel X mounted on the shaft W, and engaging the toothed wheel I, and the standard T for the shaft W adjustable in a curved line around the wheel I, substantially as described. 5th. In combination with the toothed wheel I, the shaft F on which the wheel I is loosely mounted, the shaft W, the gear-wheel X mounted on the shaft W and engaging the toothed wheel I, and the standard T, for the shaft W, adjustable in a curved line around the wheel I, substantially as described.

No. 31,911. Heating Attachment for Lamps. (*Appareil de lampe pour réchauffer.*)

John W. Zinn, Hawthorne, Fla., U.S., 2nd August, 1889; 5 years.

Claim.—1st. A heating attachment for lamps, consisting essentially of a base adapted to encircle a lamp-chimney and be supported thereon, and a series of arms or uprights hinged to the base and extending above the chimney top, substantially as shown and described. 2nd. The combination, with the base adapted to encircle the lamp-chimney and be supported thereon, of a series of arms hinged to the base and extending above the lamp-chimney, each provided with a stop projection at the lower end for limiting the downward movement of the said arms, substantially as described. 3rd. The combination, with the base adapted to encircle the lamp and be supported thereon, of a series of arms hinged to the lower edge of the base, and extended above the lamp-chimney, said arms provided with catches adapted to engage the upper edges of the base, whereby said arms are held in a raised position, substantially as shown and described. 4th. The combination, with the base adapted to encircle a lamp-chimney, of arms hinged to said base and divided at their upper ends, the said divided portions being bent in opposite directions forming hooks for suspending the device from the top of the chimney and supports for a vessel, substantially as described.

No. 31,912. Drilling Tool for Wells. (*Outil pour creuser les puits.*)

Hiram H. McLane, San Antonio, Texas, U.S., 2nd August, 1889; 5 years.

Claim.—1st. The combination of the drill or shaft having a screw-threaded portion at its upper end, the drill-rod having a screw-threaded socket to receive the same, and an annular notched flange below said socket, and a toothed key adapted to be secured adjustably to the drill engaging the said notched flange, substantially as and for the purpose set forth. 2nd. The combination of the drill or shaft having a screw-threaded portion at its upper end, the drill-rod having a correspondingly threaded socket surrounded by a notched flange, a toothed key adapted to be secured adjustably to the drill wedges adapted to be fitted at the sides of the said key, and a plate or block adapted to retain the said teeth and wedges in position, substantially as set forth. 3rd. The combination of the drill or shaft having a screw-threaded portion at its upper end, and a recess adjacent thereto, and provided with a transverse perforation extending from the bottom of said recess to the opposite side, a toothed key having shoulders formed on opposite sides thereof, wedges adapted to be fitted at the sides of said key, a shoulder block or plate adapted to retain said key and wedges in the said recess, a bolt adapted to secure said plate in position, and the drill-rod having at its lower end a screw-threaded socket surrounded by a notched flange, the whole combined and arranged substantially as and for the purpose set forth.

No. 31,913. Stove. (*Poêle.*)

Richard Bogue, Moose Jaw, N.W.T., 2nd August, 1889; 5 years.

Claim.—1st. In a stove, the pot holes formed with annular grooves around the top margin, and covers formed with corresponding annular projections to fit in the grooves, for the purpose of preventing the escape of gas and smoke. 2nd. In a stove, the annular groove C, formed in the top edge of the pot-hole B of the top A, and the projection e on the inner edge of the cover D to correspond and fit thereto, to make a close joint around the edge of the covers to prevent the escape of gas and smoke, substantially as and for the purpose specified. 3rd. In a stove, an opening E formed at or near the top of the fire-pot, and a metal lip plate F placed diagonally on the inside of the fire pot in rear of said opening, substantially as and for the purpose specified. 4th. In a stove, the combination, with the fire pot, of the opening E, lip plate F and sliding dampers G₁, G₂, substantially as and for the purpose specified.

No. 31,914. Game. (*Jeu.*)

Frederick B. Denham, New York, N.Y., U.S., 2nd August, 1889; 5 years.

Claim.—1st. A game board made with a series of adjacent figures, one part of each figure being formed by a line or lines of one color or style, and the remaining part of each figure being formed by a line or lines of another color or style, said lines or colors being severally adapted to indicate the direction and extent of movement of the pieces or men used in playing the game, substantially as herein set forth. 2nd. A game board made with a series of adjacent figures, one part of each figure being formed by a line or lines of one color or style, and the remaining part of each figure being formed by a line or lines of another color or style, combined with two or more series of readily distinguishable pieces or men, adapted for movement on the boundary lines of the figures of the board, substantially as herein set forth.

No. 31,915. Coal Oil Stove. (*Poêle à pétrole.*)

George Roberts, Montréal, Qué., 2nd August, 1889; 5 years.

Claim.—1st. The combination in a coal-oil stove, of the lamps or lights, with a stove proper consisting of casing a having diaphragms e, f and g, forming flue k, oven-space k', space g' and uptake l, movable plate 16, perforated bottom 6, the whole substantially as described. 2nd. The combination, in a coal-oil stove arranged for the products of combustion to pass directly through the oven thereof on its way to the chimney, as described, of a reservoir having sleeves 23, and a vent and filling hole 19, wick-tubes 25, deflectors 23 and 29, perforated plate 30, burner cap m having inclined perforated plates 33, the whole substantially as and for the purposes set forth. 3rd. The combination in a coal-oil stove, of the stove proper, with a lamp or lamps having caps m provided with inclined plates 33, provided with perforations 34 by which the flames of the lamp or lamps are acted upon by three currents of air on each side of them, substantially as described. 4th. The combination in a coal-oil stove, of the stove proper with a lamp or lamps having caps m provided with inclined plates 33, provided with perforations 34 to divide the currents of air passing to each flame into six parts, with the deflectors 23 and 29, and perforated plate 30, the whole substantially as described.

No. 31,916. Method of Vulcanizing Wood. (*Mode de vulcanisation du bois.*)

Samuel E Haskin, Avoca, N.Y., U.S., 2nd August, 1889; 5 years.

Claim.—1st. The method herein described of vulcanizing wood, consisting essentially in introducing heated air into the vulcanizing-chamber, and under such pressure as will prevent the evaporation of the sap of the wood being treated, substantially as set forth. 2nd. The method herein described of vulcanizing wood, consisting essentially of introducing heated air into the vulcanizing-chamber under such pressure as will prevent the evaporation of the sap of the wood being treated more or less of the moisture of such compressed air having been precipitated before the air is discharged into the wood-cylinder, substantially as set forth. 3rd. The method herein described of vulcanizing wood, consisting first in compressing the air and heating the same, second, precipitating the moisture of the air, third, superheating the air and introducing such dry superheated air into the vulcanizing chamber under such pressure as will prevent the evaporation of the sap of the wood being treated, substantially as set forth.

No. 31,917. Gate. (*Barrière.*)

Edward H. Bauer, Carbon Centre, Penn., U.S., 2nd August, 1889; 5 years.

Claim.—1st. The combination, with a gate, of a bent spindle G, the upper vertical portion of which passes through the hinge J₁, and the lower bent portion through the hinge J, and is provided with a washer g₂ upon which the hinge is supported, a grooved wheel H secured to the top of the spindle G, and cords I connected to said wheel H and extending therefrom to and over the pulleys i mounted in suitable supports and having their ends provided with weights, substantially as and for the purposes described. 2nd. The gate having a latch pivotally secured thereto, and provided with hinges J, J₁, the former having slots J₂ to vary the angle of suspension, in combination with an upright C having a catch E with a central pin e, the upright C having bearings G₁, the bent spindle G having stops g₁, g₂, respectively above and below the hinges J, J₁, the former having a depending lip for the purpose set forth, the terminal grooved wheel H mounted on said spindle, the lateral extensions F₁ having uprights F₂ in which pulleys i are secured, and the cord I whose middle portion is secured circumferentially at one place only to the wheel H passing one turn in the groove, and whose ends traverse the pulleys i terminating in weights I₁, substantially as described.

No. 31,918. Railway Switch.*(Aiguille de chemin de fer.)*

William J. Kelley, Boston, Mass., U.S., 2nd August, 1889; 5 years.

Claim.—1st. In a railroad switch, the combination, with the main rail E and the branching rails F and G, of a diverter interposed between said main and branch rails, and consisting of a continuous wheel bearing to one branch rail, a continuous side guard lip to the other branch rail, and a central fixed pointed tongue running back and forming a continuous flush edge for the wheel tread of one rail and for the slide guard lip of the other rail, substantially as described. 2nd. A railroad switch, consisting of a wheel tread, side guard lip and central pointed tongue broadened at one end, and serving as wheel tread or side guard lip, all cast in one integral piece, and adapted to be interposed between a main rail and two branch rails, substantially as described.

No. 31,919. Washing Machine.*(Machine à blanchir.)*

Anthony W. Burke, Toronto, Ont., 2nd August, 1889; 5 years.

Claim.—A washing machine, consisting of a box A, having a metallic bottom B, with corrugated slots C, oscillating rubber D, with its slats E, and vertical levers F with handle G and vertical slots K, the arms H, the cross-bar I, the rings m, the pins n and O and supports J, the drawer P, the cross-bars S and S, the strips U and the cross-piece T, all formed, arranged and combined as set forth.

No. 31,920. Manure Distributer.*(Distributeur d'engrais.)*

Stephen H. Garst, Greenville, Ohio, U. S., 2nd August, 1889; 5 years.

Claim.—1st. In a manure spreader, the body having the sliding flexible platform forming the bottom therefor, the drum P and the ropes A, B, both connected to the front end of the platform, and wound in reverse directions on the drum P, as set forth. 2nd. In a manure spreader, the body having the sliding flexible platform forming the bottom of the body, the drum P, the ropes A, B, wound in reverse directions on the drum and connected to opposite sides of the front end of the platform, and the rope V connected at its ends to the ends of the platform and passed around a roller at an intermediate point, as set forth. 3rd. In a manure spreader, the body having the sliding flexible platform forming the bottom therefor, the drum P at the rear end of the body over which drum the platform passes to turn the platform beneath the body, ropes connecting the drum with the platform, and a depending guide frame below the body to receive the platform as it leaves the drum, as set forth. 4th. In a manure spreader, the body having the sliding flexible platform forming the bottom therefor, and the depending guide frame below the body formed with the angular shaped slats L, as set forth. 5th. In a manure spreader, the body having the sliding flexible platform forming the bottom for the body, and the hangers H depending from the body and carrying a horizontal guide frame I, which is composed of an open frame work entirely independent of and entirely below the body, as set forth. 6th. In a manure spreader, the body having the sliding flexible platform forming the bottom for the body, the guide frame depending from the body and open at both ends, said platform passing over and resting upon the supporting frame as it leaves the body, the rope V connecting the ends of the platform, the drum P at the rear end of the body, over which drum the platform passes as it leaves the body, and the ropes A, B, wound in reverse directions on the drum and connected to the front end of the platform at different points, as set forth. 7th. The combination of the drum P for operating the sliding bottom, having the ratchet wheels X₁, the oscillating levers A₂ having the pawls engaging the said ratchet wheels, the oscillating lever G₂, having the vertically movable rack bar L₂, the rods connecting the said lever G₂ to the levers A₂, the pinion engaging the rack bar L₂, and means for rotating the said pinion and thereby adjusting the rack bar for the purpose set forth, substantially as described. 8th. In combination with the body, the flexible platform forming the bottom therefor, the drum P connecting with the platform for working the same, the revolving cylinder E₁, the pawl and ratchet mechanism for moving the drum P, the oscillating lever G₂, the vertically movable rack bar L₂ carried by the bar G₂, the pitman connecting with the lever G₂ and the rods connecting the oscillating lever to the pawl and ratchet mechanism of the drum, as set forth. 9th. In a manure distributer, the body, in combination with the flexible platform forming the bottom for the body, the rotating cylinder at one end of the body, the drum P for operating the platform, the pawl and ratchet mechanism for working the drum, the oscillating lever G₂, the sliding block carried by the lever, the vertically movable rack bar L₂ connected to the sliding block, the pitman connecting the shaft of the rotating cylinder to the sliding block, the rods connecting the lever G₂ to the said pawl and ratchet mechanism, and hand operating mechanism for moving the bar L₂ and thereby adjusting the throw of the oscillating lever G₂, as set forth. 10th. The combination in a manure distributer, of the bed or body having the sliding flexible platform constituting its bottom, said platform having the tappet arms G₃ at its front end, the drum P arranged at the rear end of the bed or body, and on which the sliding platform is supported, the said drum being provided with the ratchet teeth T₁ and Z₁ extending in opposite directions, the oscillating levers A₂ having the double-ended dogs or pawls adapted to engage either of the series of ratchet teeth on the wheels X₁, the spring actuated lever A₃ adapted to reverse the dogs and thereby impart retrograde rotation to the drum, for the purpose set forth, and the detent H₃ to normally secure the lever A₃ out of the engagement with the dogs or pawls, the said detent having the arm I₃ arranged in the path of the tappet arm G₃, for the purpose set forth substantially as described. 11th. The combination, with the body having the depending frame, of the sliding platform forming the bottom of said body and adapted to be turned to rest on the depending frame, the drum P for operating the sliding platform and

having the ratchet wheels X₁ provided with the ratchet teeth T₁ and Z₁ extending in opposite directions, the oscillating levers A₂, having the double-ended pawls or dogs normally engaging the teeth T₁, the sliding platform having the tappet arm G₃ at its front end, the bell crank lever A₃, having the cross bar B₃ adapted to engage the dogs or pawls and trip the same, the lever C₃ connected with the bell crank lever, the spring E₃ normally bearing forward against the said lever C₃, the spring detent H₃ to lock the said levers B₃, and having the inclined arm I₃ arranged in the path of the tappet arm G₃, for the purpose set forth substantially as described. 12th. In combination, with the bed or body, the sliding flexible platform forming the bottom therefor, mechanism for sliding the platform in one direction, and tripping devices to cause the said mechanism to bring the platform back to its initial position, and the head board W for the front end of the platform, as set forth. 13th. In combination, with the bed or body, the sliding platform therefor, the gearing for working the platform, the ratchet mechanism engaging with said gearing to determine the direction of movement of the platform, and the tripping devices to engage the ratchet mechanism when the platform reaches a certain point to change the direction of movement of the platform, as set forth. 14th. In combination with the bed or body, the sliding platform forming the bottom therefor, the gearing for working the platform to and fro, the ratchet mechanism to engage the gearing to determine the direction of rotation of the same, and the consequent direction of movement of the platform, and the adjusting means to regulate the throw of the ratchet mechanism and the consequent speed of the platform, and the tripping devices to engage the ratchet mechanism when the platform reaches a certain point, as set forth. 15th. In a manure spreader, the sliding flexible platform forming the bottom therefor, the drum P for operating the platform, the ratchet mechanism for working the drum, and the tripping device carried by the platform to engage the ratchet mechanism, whereby, when the platform has reached a certain point, the tripping device strikes the ratchet mechanism, when the continued movement of the machine causes the drum P to draw the platform back to its initial position. 16th. In a manure spreader, the bed or body, the sliding platform forming the bottom therefor, the drum P, the cords A, A₁, B₁ wound in reverse directions on the drum and connected to the platform, the ratchet mechanism for the drum and the tappet arm G₃ carried by the platform to operate the ratchet mechanism and change the direction of the rotation of the drum and the consequent direction of movement of the platform, as set forth. 17th. The combination, with the body having the depending frame, of the drum P, the sliding bottom adapted to pass beneath the body and be supported on the frame, ratchet wheel X₁ having the teeth Y₁, Z₁, extending in opposite directions, the oscillating lever A₂, the pawl pivoted to the said lever, and having the oppositely extending arms to engage the teeth Y₁, Z₁, alternately, and the spring detent D₂ secured to the lever A, as set forth.

No. 31,921. Vehicle Spring. (Ressort de voiture.)

John Diehl, Frankville, Wis., U.S., 2nd August, 1889; 5 years.

Claim.—1st. A vehicle spring, comprising a bar, a semi-elliptic spring secured to the central portion of the bar, and sockets adjustably secured to the ends of said bar, and provided with lugs designed to come on opposite sides of bolster standards, substantially as set forth. 2nd. A vehicle spring, comprising a bar, a semi-elliptic spring recessed at its ends and secured to the central portion of the bar, and sockets adjustably secured to the ends of said bar, and provided with lugs designed to come on opposite sides of bolster standards, substantially as set forth. 3rd. A vehicle spring, comprising a bar, a semi-elliptic spring secured to the central portion of the bar, and having upwardly and outwardly curved ends, and lugs depending from said bar to come upon said ends of the semi-elliptic spring, substantially as set forth. 4th. A vehicle spring, comprising a bar, a semi-elliptic spring secured to the central portion of the bar, and having upwardly and outwardly curved ends and sockets, adjustably secured to the ends of said bar, and provided with lugs having downward extensions, substantially as set forth. 5th. A vehicle spring, comprising a bar, the semi-elliptic spring F secured to the bar to have its ends rest upon the vehicle bolster, and the springs L arranged to depend from the bar and be normally out of contact with said semi-elliptic spring, substantially as set forth. 6th. A vehicle spring, comprising a bar, a single semi-elliptic spring secured to the central portion of the bar, and two spiral springs of different lengths arranged to depend from each end of said bar, whereby one of the spiral springs in each pair is always in contact with the semi-elliptic spring, and the other normally out of contact therewith, substantially as set forth. 7th. A vehicle spring, comprising a bar, a single semi-elliptic spring secured to the central portion thereof, two spiral springs of different lengths arranged to depend from each end of the bar, and short spiral springs depending from beneath said semi-elliptic spring, whereby one of the spiral springs in each pair is always in contact with the semi-elliptic spring, and the other normally out of contact therewith, substantially as set forth. 8th. A vehicle spring, comprising a bar, provided at each end with the recesses B, C, the semi-elliptic spring F, the spiral springs K arranged in the recesses C of the bar, and impinged against the ends of said semi-elliptic spring, the springs L arranged in the recesses B of said bar, and having their upper ends provided with eyes L₁, the plates D and the rivets M connecting said eyes and plates, substantially as set forth. 9th. A vehicle spring, comprising the bar A, adjustable sockets P arranged on the ends thereof and provided with lugs P₁, having extensions T₁, the semi-elliptic spring F, having the upwardly and outwardly curved ends F₁, and the spiral springs K, L, of different lengths suspended from said bar, substantially as set forth.

No. 31,922. Smoothing and Sad Iron Heater.*(Poêle pour les fers à repasser.)*

Anselm Schmitt, Buffalo, N.Y., U.S., 2nd August, 1889; 5 years.

Claim.—1st. An improved article of manufacture, a laundry and tailor store for heating flat and smoothing irons, consisting essentially of the base having the grate, the fire-pot, the flaring middle

piece having the chute and cover, the plate having the side openings and the top having the side and back flues and the hinged cover, as and for the purpose set forth. 2nd. In heating stoves, the combination with the flaring middle piece, of the plate and the series of tubes supporting said plate, said tubes having their exit in the back flue, as and for the object set forth. 3rd. In laundry and heating stoves, the combination, with a suitable base and fire-pot, of a flaring middle piece, a plate having suitable supports and provided with passages in its forward corners, and a U-shaped top having double wells provided with ducts and a hinged cover for said top, as and for the purpose set forth.

No. 31,923. Fluid Feeder.

(*Injecteur de fluide.*)

Walter B. Wright, Chicago, Ill., U.S., 2nd August, 1889; 5 years.

Claim.—1st. In an injector fluid fuel feeder, the combination of an oil supply reservoir with a nozzle containing a plug valve cavity, with an aperture leading to said reservoir on one side, and a discharge aperture leading to the injector proper on the other side, in combination with a plug seated within said cavity, and provided with a spiral groove upon its surface for regulating the supply of fluid to the discharge aperture. 2nd. In an injector fluid fuel feeder, the combination of an oil supply reservoir with a nozzle containing a plug valve cavity, with an aperture leading to said reservoir on one side, and a discharge aperture leading to the injector proper on the other side, in combination with a plug seated within said cavity, and provided with a spiral groove upon its surface for regulating the supply of fluid to the discharge aperture, a handle for such plug, and a graduated quadrant over which such handle passes, whereby the effective area of the fluid passage-way may be correctly indicated.

No. 31,924. Wood Planing Machine.

(*Machine à raboter le bois.*)

Josiah Ross, Buffalo, N. Y., U.S., 2nd August, 1889; 5 years.

Claim.—1st. In a planing machine, the combination, with the main frame and a rotary cutter head provided with spindles mounted in the main frame, of an independent driving shaft, and a universal or yielding coupling, whereby said driving shaft is connected with one of the spindles of the cutter head, substantially as set forth. 2nd. In a planing machine, the combination, with the main frame and a rotary cutter head or cylinder provided with spindles mounted in bearings in the main frame, of an independent driving shaft, and a universal coupling connecting said driving shaft with one of the spindles of the cutter head, and consisting of a sleeve, and two connecting pins secured respectively to the ends of the shaft and spindle, and arranged in openings formed in the sleeve, substantially as set forth.

No. 31,925. Saw. (*Scie.*)

William T. Wilson, Marshfield, Ore., U.S., 2nd August, 1889; 5 years.

Claim.—In a saw, a central double tooth A, having opposite cutting edges *a*, in combination with a series of double teeth A₁ having cutting-edges *a*₁, and rounded edges *b*₁ and intervening clearing-teeth B occupying one part of the saw, and another series of double teeth A₂ having cutting-edges *a*₂ and rounded edges *b*₂, and intervening clearing-teeth B₁ occupying another part of the saw, the teeth of the two series being constructed respectively to cut from the centre in opposite directions, substantially as set forth and described.

No. 31,926. Thrashing Machine.

(*Machine à battre.*)

Abel Kleinstiver and Benjamin S. Van Tuyl, Petrolia, Ont., 2nd August, 1889; 5 years.

Claim.—1st. The combination of the tooth bars *a*₃, provided with sockets *a*₄ having one or more inwardly inclined faces, and teeth *a*₅, the shanks of which have one or more inclined sides, and means for binding them in place, substantially as shown and described and for the purpose specified. 2nd. The grain deck D having openings D₂ formed therein, and supported on the hangers D₁, in combination with the fingers or prongs D₃ and D₄, substantially as shown and described and for the purpose set forth. 3rd. The combination of the supplemental frame F, shaft F₁, eccentric pulley *e*₇, endless belt *e*₁, slats *e*₂, raking teeth *e*₃, pulleys *e*₄, *e*₅, and *e*₆, and hanger F₂, substantially as shown and described and for the purpose set forth. 4th. The grain deck D having opening D₂ formed therein, prongs or fingers D₃ and D₄, hangers D₁, and connecting bar F₃, in combination, with the supplemental frame F, shaft F₁, eccentric pulley *e*₇, endless belt *e*₁, slats *e*₂, raking teeth *e*₃, pulleys *e*₄, *e*₅, and *e*₆, and hanger F₂, substantially as shown and described and for the purpose specified. 5th. A straw deck E, in combination with and balanced on a hanger F₂, and means for operating said deck, substantially as shown and described and for the purposes specified. 6th. The combination of the screen H, and adjustable grating H₁, substantially as shown and described for the purpose specified. 7th. The combination of the supplemental frame F, shaft F₁, eccentric pulley *e*₇, hanger F₂, connecting bar F₃, straw decks D and E, grain decks F₄ and F₅, screen H, adjustable grate H₁, grain chutes and conduits I, I₃ and I₁ and I₄, respectively, deflecting board I₂, and fan L, substantially as shown and described and for the purpose specified.

No. 31,927. Hot Air Furnace. (*Calorifère à air.*)

John F. Durham and Fitz-Hugh Edwards, Detroit, Mich., U.S., 2nd August, 1889; 5 years.

Claim.—1st. In a hot-air heating system, the combination, with a steam-generator A, of an air-heating chamber D, a system of horizontal flues C, a system of steam-heating coils J, one or more hot-air flues E, inlets R and S, dampers T, and the connection U, substan-

tially as described. 2nd. In a hot-air heating system, the combination of the steam-generator A provided with the smoke-flue, the smoke-flue I, the air-chamber D, the smoke-flues H, the steam-coils J, the pipe K, the return pipe M to the generator, the hot-air flues E having inlets R and S, the dampers T and T₁, and the partition P provided with the damper Q, and a cold-air inlet O, substantially as described.

No. 31,928. Swivel. (*Émérillon.*)

The Oneida Community, Community, N. Y., U.S., (assignee of John F. Sears, Clifton, Ont., and Harry E. Kelley, Niagara Falls, N. Y., U.S.), 2nd August, 1889; 5 years.

Claim.—1st. A swivel consisting of a member formed with a neck and head on its coupling end, and a member formed of a metal plate folded upon itself, with the end portions contiguous to each other and formed with semi-cylindrical recesses in the adjacent sides of said end, portions embracing the aforesaid neck and provided with an aperture through the two thicknesses of metal between integral ends of the folded plate and rear ends of the semi-cylindrical recesses, substantially as described and shown. 2nd. A swivel consisting of a member composed of a metal plate folded upon itself with the ends contiguous to each other, and formed with coinciding necks and heads on said ends, and a member having its coupling end composed of two thicknesses of metal firmly united and formed in the adjacent sides of said thicknesses, with semi-cylindrical recesses embracing the aforesaid necks, and provided with an aperture at the rear ends of said recesses for the reception of the aforesaid heads, substantially as described and shown.

No. 31,929. Sectional Hot Water Furnace.

(*Calorifère à eau en sections.*)

Harry W. Garth and John H. Garth, (assignees of John G. Smith), Montréal, Qué., 2nd August, 1889; 5 years.

Claim.—1st. In a hot water furnace, the combination, with a series of vertical sections cast separate from each other, of hollow bolts or tubes passing transversely through said sections at top and bottom, and serving to secure the same firmly together, such hollow bolts or tubes having also perforations or openings in communication with each of said vertical sections, and suitable flow pipes, whereby the water fed to the lower hollow bolt will enter said sections, and pass from into the upper hollow bolt and from thence to the flow and thus effect a continuous circulation, substantially in the manner set forth. 2nd. In a hot water furnace, the combination, with a series of vertical sections cast separate from each other, of hollow bolts or tubes passing transversely through said sections at top and bottom, and serving to secure same firmly together such hollow bolts or tubes, having also perforations or openings in communication with each of said vertical sections, diaphragms or checks serving to divide each of said sections into upper and lower compartments or chambers, a coil of pipes for each section in communication with both chambers thereof, and suitable flow pipes, substantially as and for the purpose specified. 3rd. In a hot water furnace, the combination, with the vertical cast sections, of the pipes G, G in communication with both sides of said sections, and rocking bars G₁, G₁ arranged alternately with said pipes, and such pipes and bars forming the grate, substantially as set forth. 4th. The combination, with the vertical sections having the ribs or projections *d*, of the hollow bolts securing said sections together, and having perforations at each side of said ribs or projections, for the purpose set forth. 5th. The combination, with the vertical cast sections and with the hollow-bolts for securing the same together, of the loose nuts *c*₄, *c*₄, contained within the front section into which the ends of said hollow bolts are screwed, substantially as specified. 6th. A cast section for a hot water furnace, having the diaphragm or check *a*₄ with perforation *a*₅ for the purpose described.

No. 31,930. Extensible Car Step.

(*Marche-pied de char articulé.*)

James F. Wood and John F. Wood, Wilmington, Del., U.S., 2nd August, 1889; 5 years.

Claim.—1st. The combination, with a tread formed with a diagonal leaf, of an arm connected to said leaf, a piston carried by the arm, a spring arranged in connection with the piston, a cylinder and connections between the cylinder and the compressed-air reservoir, substantially as described. 2nd. The combination, with the permanent steps of a car, of a tread adjustably connected thereto, a cylinder, a piston arranged therein, connections between the piston and the tread, and connections between the cylinder and the compressed-air reservoir, substantially as described. 3rd. The combination, with the permanent steps of a car, of castings formed with ways connected thereto, treads having diagonal leaves which carry anti-friction rolls, said rolls resting within the ways, arms connected to the leaves, pistons connected to the arms, cylinders within which the pistons ride, springs arranged in connection with the pistons, and connections between the cylinders and the compressed-air reservoir, substantially as described.

No. 31,931. Panel. (*Panneau.*)

Heman A. Benedict, Syracuse, N. Y., U.S., 2nd August, 1889; 5 years.

Claim.—1st. A section consisting of pulp board or its described equivalent completely framed with wood, the pulp and frame being jointed together and having a surface finishing material secured to the section and extending over the frame to the edges of the same, substantially as specified. 2nd. A stile standard or cross-bar comprising two sections which consist of a body of pulp board, and having a surrounding frame of wood jointed and secured thereto, said sections being fastened apart, whereby grooves are formed for the reception of panels, substantially as specified. 3rd. A cross-bar consisting of two sections, each comprising a pulp board body having a surrounding frame B of wood jointed thereto, tenons F, and spacing

blocks E, substantially as specified. 4th. A section consisting of pulp board or its described equivalent completely framed with wood, the pulp and frame being jointed together at its corners by mortise and tenon joints, the tenons being shorter than the thickness of the mortised pieces, whereby the exterior surfaces of the latter are unimpaired, substantially as specified. 5th. A structure comprising sections consisting of two or more sheets of pulp board connected and pressed together jointed to a wooden frame, and surfaced with veneer and standards, and cross-bars, each comprising two of said sections cemented together, substantially as specified. 6th. A structure comprising sections consisting of a pulp board body completely framed with wood, and surfaced with veneer, standards made up of two of such sections spaced as described to form mortises for tenons, and cross-bars made up of two of such sections spaced and provided with tenons, substantially as specified.

No. 31,932. Wind Mill. (*Moulin à vent.*)

John B. Foster, Zurich, Ont., 2nd August, 1889; 5 years.

Claim.—1st. In a wind mill, the fan wheel A, fans B, half ring C, levers D, rods E, E, governor plate F, central shaft G, and pitman and rod J, K, all constructed and operating substantially as shown and specified. 2nd. In combination with the shaft G, fan wheel A, and governor F, the cord or chain L, bend arm M, and weight N for adjusting the fans B, substantially as shown and specified.

No. 31,933. Stove. (*Poêle.*)

Francois D. Taylor, Brockville, Ont., 3rd August, 1889; 5 years.

Claim.—1st. The combination, with a base burning stove, of cooking ovens, passages for products of combustion, and water heating chambers, as shown and described. 2nd. The combination, with a base burning stove, of cooking ovens, passages for products of combustion, water heating chambers, and plate warmer, as shown and described. 3rd. The combination, with a base burning stove, of a cooking oven arranged on one side of and above the fire chamber, and passage round same from fire chamber to outlet, as shown and described. 4th. The combination, with a base burning stove, of water chambers, and a cooking oven, with spaces for products of combustion interposed between said water chambers and cooking oven, as shown and described. 5th. The combination with a base burning stove, of a water heating chamber encircling or partially encircling feed hopper, as shown and described. 6th. The combination, with a base burning stove, of an air conductor having intake with suitable damper at bottom of stove, and delivery above the top of fire pot, as shown and for the purposes described. 7th. The combination, with a base burning stove, of a water heating chamber encircling or partially encircling the feed hopper, a water reservoir separated from said chamber by an oven, and passages for products of combustion, and a pipe connecting the said heating chamber with said reservoir, as shown and described. 8th. In combination, with the fire grate, a removable sieve interposed between said grate and ash pit, and hangers carrying same, as and for the purposes described. 9th. In combination, with a base burning stove, the shelf O, as shown and described. 10th. In combination, with a base burning stove, a fire chamber with removable top, as shown and described. 11th. In combination with a base burning stove, a fire chamber with top having recess or recesses E₃, for the purpose described. 12th. In combination with the fire chamber of a base burning stove, fenders E₂, as shown and described.

No. 31,934. Suspended Railway.

(*Chemin de fer aérien.*)

John Thomson, Kansas, Mo., U.S., 3rd August, 1889; 5 years.

Claim.—1st. The combination, with a track and a series of carriages adapted to travel thereon, and having pulleys journaled in their lower portions, of a corresponding series of buckets of graduated weights, a like series of latch sheaves adapted for connection with said buckets, and a rope which is secured to the forward carriage of the series, and then passes successively through each latch-sheave and over the pulleys of each carriage of the combined series, as shown and described, whereby the said rope serves as the means of hoisting all the said buckets successively, as set forth. 2nd. The combination, with a track, a series of carriages travelling thereon having pulleys journaled in their lower ends, and a series of buckets of graduated weight, of latch-sheaves adapted to engage said buckets, and a rope secured to the forward carriage passing alternately over the carriage-pulleys and through the latch-sheaves, substantially as shown and described. 3rd. The combination, with a track, a series of carriages travelling thereon having pulleys journaled in their lower ends, and a series of buckets graduated in weight from the front to the rear, the heaviest of latch-sheaves adapted to engage said buckets, and a rope secured to the forward carriage passing alternately over the carriage-pulleys and through the latch-sheaves, and means, substantially as shown and described, for locking the latch-sheaves in the carriages, and releasing said carriages, as and for the purpose specified. 5th. The combination, with a track, a series of carriages travelling thereon having pulleys journaled in their lower ends, coupling-rods uniting said carriages, a series of buckets graduated in weight from front to rear, the rear bucket being the lightest, and latch-sheaves adapted to carry said buckets, of a rope secured to the forward carriage passing alternately over the carriage-pulleys and through the latch-sheaves, and means, substantially as shown and described, for locking the carriages upon the track and automatically releasing the same, as set forth. 6th. The

combination, with a track, a train of united carriages travelling upon the same, a transverse stop-bar secured in the said carriages, and pulleys journaled therein, and a gravity-latch pivoted in the track engaging the stop-bar of the forward carriage, of a series of buckets graduated in weight, latch-sheaves attached to said buckets, and a rope secured to the forward carriage passing alternately over the carriage-pulleys and through the latch-sheaves, substantially in the manner and for the purpose specified, whereby the buckets are raised alternately from the rear and the carriages released when elevated, as set forth.

No. 31,935. Self-Heating Flat Iron.

(*Fer à repasser à chaufferelle.*)

John Morrow and Frank Curtis, Jr., Ingersoll, Ont., 3rd August, 1889; 5 years.

Claim.—1st. The tube T and a core or central portion I having a helical grooved passage H formed as described, conduit C₁, and valve V, in combination with the distributor D, formed as described, substantially as and for the purpose hereinbefore set forth. 2nd. The hollow body B formed as described, in combination with the heating mechanism, substantially as and for the purpose hereinbefore set forth.

No. 31,936. Cutter Head. (*Porte-outil.*)

Cornelius Sullivan, Newark, N.J., U.S., 3rd August, 1889; 5 years.

Claim.—1st. The improved cutter-head herein described, consisting of a hub a, a shank made integral therewith, a drill or reamer adapted to fit in a socket in the centre of said hub as a centre, guide arms extending from said hub as described, longitudinal slots in said arms, cutter stocks adjustable in said slots, and means for securing them to said arms, slots in said cutter stocks adapted to receive the shanks of the cutters, and cutters formed as described, and provided with shanks adapted to fit in the slots in the cutter stocks, substantially as and for the purpose set forth. 2nd. The improved cutter-head herein described, consisting of a hub, a shank made integral therewith, a drill or reamer adapted to fit in a socket in the centre of said hub as a centre, guide arms extending from said hub as described, longitudinal slots in said arms, cutter stocks adapted to fit in said slots, and means for securing them to said arms, slots in said cutter stocks adapted to receive the shanks of the cutters formed as described, and provided with shanks adapted to fit in the slots in the cutter stocks, and transverse recesses in said arms adapted to receive and hold the shanks of said cutters, substantially in the manner as and for the purpose set forth. 3rd. The improved cutter-head having arms extended from the hub as described, so as to bring the cutters on a diametrical line with the hub, and provided with slots parallel to the edges of said arms, cutter stocks secured in said slots, and curved cutters secured in cutter stocks, substantially as and for the purpose set forth. 4th. In a cutter-head provided with extending slots or recessed arms, a cutting tool curved in the form of a segment of a circle, as described, and provided with a shank, and means for securing said cutting tool to said arm, substantially as described and for the purposes set forth. 5th. In a cutter-head provided with a central socket, and extending slotted or recessed arms, a drill or reamer as secured in said central socket as a centre, guide and cutting tools curved in the form of a segment of a circle as described, and provided with shanks, and means for securing said cutting tools to said arms, substantially as described and for the purposes set forth. 6th. In a cutter-head provided with extending slotted or recessed arms, a cutting tool curved in the form of a segment of a circle of the size of the hole to be cut, and provided with shanks and shoulders formed on said shanks, and means for securing said cutting tool to said arms, substantially as described and for the purpose set forth. 7th. The combination, with a cutter-head provided with a central socket, the extending slotted or recessed arms of a drill or reamer, and centre guide curved cutting tools, said cutting tools being provided with shoulder shanks, and means for securing said drill or reamer and cutting tools to said cutting head, substantially in the manner as and for the purposes set forth.

No. 31,937. Open Gas Fire Place.

(*Foyer à gaz ouvert.*)

George E. Wright, Birmingham, Eng., 3rd August, 1889; 5 years.

Claim.—1st. In open gas fireplaces, the vertical perforated corrugated grating or flues D, curved or flat, set against a brick or other bak above the gas burner, so as to collect and radiate the heat from the gas flames, substantially as set forth. 2nd. In open gas fireplaces, the brick or other back E having a top flange or lip et, and with or without the corrugated vertical ribs et, substantially as and for the purposes set forth. 3rd. In open gas fireplaces, and in combination with the gas burner thereof, the vertical perforated grating or flues D above the said burner, and the brick or other back against which the grating or flues D are set, the said back E having a top flange or lip et, with openings f, all for the purposes and substantially as set forth. 4th. In open gas fireplaces and in combination, the gas burner b provided with an additional chamber m, the vertical perforated grating or flues D above the said burner, and the brick or other back E against which the grating or flues D are set, the said back E having a top flange or lip et, all for the purposes and substantially as set forth. 5th. In atmospheric gas burners for gas fire-places, the additional chamber m or chambers between the mixing chamber and the injector tube, the said chambers being connected together by passages or otherwise so as to split up the gaseous mixture for the purposes and substantially as hereinbefore set forth. 6th. In an atmospheric gas burner for gas fire-places, the combination, with the injector tube i, mixing chamber l, and outlet orifices or burners proper c, of the additional chamber f communicating with the injector tube i, and mixing chamber l, for the purposes and substantially as hereinbefore set forth.

No. 31,938. Magazine or Repeating Fire-Arm. (*Arme à feu à magasin ou à répétition.*)

James P. Lee, Iliou, N. Y., U. S., 3rd August, 1889; 5 years.

Claim.—1st. A magazine, adapted to contain two rows or columns of cartridges, and so constructed that when it is applied to a fire-arm the cartridges, without being brought to a central position in the said magazine, may be fed into the barrel by the breech bolt alternately from either of the said rows or columns. 2nd. A magazine, adapted to contain two rows or columns of cartridges, and provided with lips or flanges, so arranged that the uppermost cartridge in either column will be held in place by one of the said lips or flanges, and by the adjacent cartridge in the other column, as above specified. 3rd. A magazine, adapted to contain two rows or columns of cartridges, and having its mouth of greater width throughout its entire length than the cartridges, substantially as hereinbefore described. 4th. The combination, with the magazine, of the peculiarly-shaped follower hereinbefore described. 5th. The modification of my invention, wherein the magazine is made with a single lip or flange, or without lips or flanges, and the cartridges are retained in the magazine by a shoulder or shoulders, in the shoe or body of the gun, substantially as described. 6th. The improved cartridge magazine, constructed, substantially as described, with reference to the accompanying drawing and for the purpose specified.

No. 31,939. Steam Pump. (*Pompe à vapeur.*)

Edward C. Johnson, Macon, Ga., U. S., 3rd August, 1889; 5 years.

Claim.—1st. In a steam pump of the character described, the combination of a casing having concentric annular steam and water chambers, partitioned and provided with ports, as described, and a compound piston, consisting of broken rings in said chambers, provided with caps and moving together, substantially as described. 2nd. In a steam pump, the combination, with the casing having steam and water chambers, of the character described, and provided with inlet and outlet ports, of the steam piston ring having a cover extending across the ring from side to side, and the water piston ring having a similar cover and a water passage by which fluid pressure is admitted between the covers, substantially as described. 3rd. The combination, with the casing and the grating compound piston described, of a projection on the piston, and a starting lever passing through the case, and having a bearing face to engage said projection on the piston. 4th. In a steam pump of the character described, the combination, with the casing and the compound piston, of a projection on the piston, and a shaft passing through the casing, said shaft having a shoulder in position to engage the projection on the piston, and an incline by which the starting shaft may be automatically thrown out of engagement. 5th. The combination, with the casing, having annular steam and water chambers partitioned, as described, and having ports, as stated, and the balanced compound piston having overhanging covers, of the partitioned space between the walls of the chambers, whereby the balancing pressure may be adapted to the condition of the work. 6th. In a pump, of the character described, the combination of the annular steam and water chambers, partitioned, as described, and having inlet and outlet ports, the broken ring pistons in said chambers, having caps covering the chamber walls, and a passage leading above the water cap from the delivery side of the pump, substantially as set forth. 7th. In a pump of the character described, the steam piston having a broken ring and the water piston with annular ring, each having a cap made separately, but coupled to move together in the annular chambers of the pump body. 8th. The grating piston described, moving in chambers concentric to each other, and having a supporting connection with the casing, independent of the partition in the chambers, as set forth. 9th. The steam pump described, or the equivalent thereof, having steam and water delivery chambers independent of the piston chambers, the steam chamber having an exhaust directly into the water delivery chamber, substantially as described.

No. 31,940. Apparatus for Renting Opera Glasses in Theaters. (*Appareil pour louer les lorgnettes dans les théâtres.*)

James W. Patterson, New York, N. Y., U. S., 3rd August, 1889; 5 years.

Claim.—1st. The combination, with a suitable support, as a theatre chair, of an opera glass and a coin-actuated lock for fastening the glass to such support until released by the insertion of a coin. 2nd. The combination, with a suitable support, as a theatre chair, of an opera glass and a coin-actuated lock attached fixedly to said support and formed with fastening devices for engaging the opera glass and holding the latter to the support until unlocked by the insertion of a coin. 3rd. The combination, with a suitable support, as a theatre chair, of an opera glass, and a coin-actuated lock adapted to hold the opera glass to the support, and constructed with a locking bolt or catch, a coin slot or conduit, and a movable part projecting normally into the path of the coin, and adapted to be displaced by the passage of the coin, and connected to said bolt, whereby, when so displaced, the bolt is withdrawn and the opera glass released. 4th. The combination, with a suitable support, as a theatre chair, of an opera glass, and a coin-actuated lock attached to said support, and adapted to engage the glass and hold it to said support, said lock constructed with a locking bolt or catch, a coin conduit, a pusher adapted when manually displaced to forcibly move the coin, and a movable part projecting into the path of the coin, and adapted to be displaced by such forcible movement of the coin and connected to the bolt, whereby, when so displaced, the bolt is withdrawn. 5th. The combination, with a suitable support, as a theatre chair, of an opera glass, and a coin-actuated lock for engaging said glass and holding it to the support, said lock consisting of a fastening bolt or catch, a coin conduit, a pusher adapted, when manually displaced, to forcibly move the coin within said conduit, and a movable tumbler arranged to be displaced by such forcible movement of the coin and connected to the bolt, whereby, when so displaced, it permits

the retraction of the bolt. 6th. The combination, with a suitable support, as a theatre chair, of an opera glass, and a coin-actuated lock for holding the glass to such support, said lock consisting of the combination of a locking bolt or catch, a spring tending to retract said bolt, a tumbler normally resisting the retraction of said bolt, a coin conduit and a pusher for forcibly moving the coin against the said tumbler, and thereby displacing said tumbler out of the path of the bolt.

No. 31,941. Porous Earthenware Building Material. (*Matériel de construction en terre poreux.*)

William Lenderoth, Deseronto, Ont., 3rd August, 1889; 5 years.

Claim.—As a new article of manufacture, an earthenware material having a series of internal encrusted cells, the encrusted coating around the cells being harder than the rest of the material, substantially as described.

No. 31,942. Composite Fabric. (*Tissumixte.*)

William H. H. Childs, Brooklyn, N. Y., U. S., 3rd August, 1889; 5 years.

Claim.—A fabric composed of one or more layers of paper, felt, or other fabric, combined with alternate layers of coal tar, pitch, or other waterproof substance through which layers are passed, threads, wires, or other filamentous material embedded in said layer, substantially as shown and described.

No. 31,943. Churn Dog Power. (*Force de chien de baratte.*)

Daniel Ormiston, New Glasgow, N. S., 3rd August, 1889; 5 years.

Claim.—The combination, with the frame A, and endless platform B, of the pulley D, shaft E, power wheel F, bracket H, sliding block J having an arm K, and the connecting rod M to operate as set forth.

No. 31,944. Vehicle Thill.

(*Limonière de voiture.*)

George A. Hynds, Little Falls, N. Y., U. S., 3rd August, 1889; 5 years.

Claim.—1st. The combination, with the runners, of the castings B secured thereto and formed with arms b, and the shafts having shaft-irons detachably secured between said arms, substantially as and for the purpose set forth. 2nd. The combination, with the runners, of the castings B detachably secured to the forward portions thereof, and formed with the longitudinal arms b, provided with a plurality of holes, as shown, and the shafts provided with shaft-irons detachably secured between said arms, substantially as and for the purpose specified. 3rd. A side draft for sleighs formed by having the shafts bent laterally for a suitable distance, and thence rearward to their connection with the runners to which they are both directly attached without the use of a cross-bar, substantially as shown and described. 4th. The combination, with the runners, metal portions of the shafts curved and having offsets, as shown, and formed with tubular forward ends, of the wooden forward portions of the shafts fitted and secured in said tubular portions, substantially as shown and described.

No. 31,945. Disk Harrow. (*Herse à disques.*)

Lowell A. Richards, Grayson, Cal., U. S., 3rd August, 1889; 5 years.

Claim.—1st. A disk-harrow having the oppositely-arranged disk-gangs, with the inner ends of their shafts abutting or adjacent to each other, and the short shafts J extending into holes or openings in the inner ends of the disk-shaft sleeves, and having internal wearing-plates K, substantially as and for the purpose herein described. 2nd. In a harrow, the short shafts J having their meeting-ends hinged together, and their outer ends entering holes in the adjacent meeting-ends of the disk-shafts or sleeves thereon, in combination with the lever O, and the connecting-rod N by which this lever is united with the joint of the shafts J, substantially as and for the purpose herein described. 3rd. The disk-harrow with the angularly supported divergent shafts, the adjacent meeting ends having sleeves bored to receive short shafts J, the meeting-ends of which are hinged together, in combination with wearing-plates upon the ends within the sleeves G, to act as thrust-bearings, and oil-holes, whereby the chambers within the sleeves may be supplied with a lubricant, substantially as herein described.

No. 31,946. Pipe or Tube Coupling. (*Joint de tuyau ou de tube.*)

William Martin, Dunkirk, N. Y., U. S., 3rd August, 1889; 5 years.

Claim.—1st. A ball-and-socket joint for connecting pipes and tubes, the internal portions of which are provided with lugs or cross-bars, and the bolt connected with the internal lugs or cross-bars to permit the parts to have a universal and free movement relative to each other, substantially as set forth. 2nd. A ball-and-socket joint for connecting pipes and tubes, the internal portions of which are provided with lugs or cross-bars, and the bolt and spring mounted thereon connected with the internal lugs or cross-bars, all arranged and operating substantially as and for the purpose set forth.

No. 31,947. Heel Counter and Toe Tip for Boots and Shoes. (*Contrefort et bout de pied de chaussure.*)

George Beacock et Charles H. McCrady, Brookville, Ont., 3rd August, 1889; 5 years.

Claim.—As an improved article of manufacture, a heel counter and toe tip for boots and shoes consisting of a single piece, and thickness of rawhide moulded to form without wrinkles, and having a uniformly smooth surface throughout, as set forth.

No. 31,948. Jump Seat Vehicle.*(Voiture à siège à bascule.)*

Charles H. Stratton, Salem, Ohio, U.S., 3rd August, 1889; 5 years.

Claim.—1st. The combination, with a vehicle body and seats pivotally supported therein, of tie-bars secured to the sides of the body, and embracing legs of the seat for limiting the movement of said legs. 2nd. The combination, with a vehicle body, seats and supporting legs pivoted in the body and to the seats, of tie-bars secured to the inner sides of the body, and adapted to loosely receive legs of one seat and thereby regulate their position, substantially as set forth. 3rd. The combination, with the rear seat, its supporting limbs and two rocker plates, of a pair of tie-bars attached to the sides of the vehicle body to prevent their outward strain by tying them together, with the seat and its limbs, substantially as set forth. 4th. The combination, with a rear seat, its limbs and supporting standards, of a front seat, legs supporting the same, the rear legs having shoulders formed thereon, and two parallel bars loosely connecting the legs of the two seats, and adapted to bear against the shoulder on the legs of the front seat when the seats are elevated, substantially as set forth. 5th. The combination, with the body rear seat, and a pair of connected jump seats, of supporting standards secured to the side plates of the rear seat, and tie-bars secured to the inner sides of the body to assist in supporting the seat, substantially as set forth. 6th. The combination, with the sides of a vehicle body, and seat supporting strips affixed to the inner surface of these sides, of a seat adapted to move front and rearward in pivoted limbs, and tie-bars to tie the sides of the body together by sliding connection with them, of the front limbs of the rear seat, substantially as set forth. 7th. The combination, with the sides of a vehicle body, tie-bars and strips that support a rear seat and are affixed to the inner surfaces of these sides, of a rear seat, its pivoted limbs, two seat end plates, and two rocker plates, substantially as set forth. 8th. The combination, with a dash, a foot-board, and a cross-sill on which the foot-board rests, of bifurcated guide bars, the upper limbs being attached to the foot-board rigidly, and the lower limbs adapted to slide in holes in the cross-sill, and means to move the guide rods endwise, substantially as set forth. 9th. The combination, with a foot-board, a dash fixed to it, and a cross-sill of the vehicle frame, of parallel guide-bars fastened to the foot-board, and adapted to slide in holes in the cross-sill, and connecting bars pivoted to the inner ends of the guide bars and also to the limbs of the rear jump-seat, substantially as set forth. 10th. The combination, with the body of a vehicle, a cross-sill fixed thereto, and parallel guiding bars adapted to slide backward or forward in the sill of a foot-board held fast to the guiding bars, and a dash secured to said foot-board, substantially as set forth. 11th. The combination, with the body of a vehicle, sliding seats therein, and connecting bars having pivotal connection with legs of the seats, of a fixed cross-sill in the forward end of the body, parallel guiding bars adapted to slide therein, the latter being pivoted to the connecting bars, a foot-board held fast to the guiding bars, and a dash secured to the foot-board, substantially as set forth. 12th. The combination, with a pair of pivoted jump-seats, the rear-legs of one seat having a downwardly-projecting web thereon, of a sliding dash, and a connecting rod pivoted to the dash and to the web, whereby the former is operated by a movement of the seat, substantially as set forth.

No. 31,949. Car Coupling. (Attelage de chars.)

John W. Roberts, Watford, Ont., 3rd August, 1889; 5 years.

Claim.—The combination, with a draw-head A having an internal cavity C open at the bottom, and opening into a vertically oblong mouth bevelled inwardly from the front, and rearwardly into a longitudinal pocket E, of the arrow-head coupling bar F having the head bevelled at the front and rearwardly, provided sidewise with an overbalance weight f_1 , and f_2 , and the levers H, I fulcrumed to recede the draw-bar into the pocket and project the same, whereby the arrow-head will enter the opposite draw-head and said coupling bar, then turn automatically by the gravitation of the weight to bring the ends of the coupling-bar to coupling position with the draw-head and uncouple, as set forth.

No. 31,950. Railway Signal.*(Signal de chemin de fer.)*

Charles D. Tisdale, Boston, Mass., U.S., 3rd August, 1889; 5 years.

Claim.—1st. In a semaphore signal device, the combination, with the shaft B, of a semaphore arm K projecting equally in opposite directions from said shaft, and an escapement G to said shaft, substantially as described. 2nd. In a semaphore signal device, the combination, with the hollow post A, a weight operated shaft B journaled therein, a scape wheel C, electro-magnet pallets c, d , a semaphore arm K having a window h in each end, and a lantern M, substantially as and for the purpose specified. 3rd. In a semaphore signal device, the combination, with the hollow post A, of the shaft B, driver D, two toothed escape wheel C, cord E, weight F, angled lever G having pallets c, d , and armatures H, electro-magnet J, semaphore arm K having colored windows h , and lantern M, substantially as and for the purpose specified. 4th. In a semaphore signal device, the combination, with the shaft B, escape wheel C, driver D, cord E, and weight F, of the pin b , substantially as and for the purpose specified.

No. 31,953. Watch. (Montre.)

August Anaron, Denens, Switzerland, 3rd August, 1889; 5 years.

Claim.—The combination, with the ratchets a, b mounted on suitable shafts, of the spring barrel provided with the number of teeth described, and carrying the main spring of the length set forth, the pinion d meshing with the teeth of said barrel, and gearing for connecting said pinion with the usual escapement and with the hour and minute hands, as described.

No. 31,952. Car Coupling. (Attelage de chars.)

Freemont T. Rogers, Linton, Ky., U.S., 3rd August, 1889; 5 years.

Claim.—1st. In a car coupler, the combination, with the draw-head, of the shaft journalled in bearings depending from the lower outer corner of said draw-head, and having the weighted arms c at its ends on said sides of the draw-head, and the guide block for the link secured on said shaft between the bearings thereof, and having its upper side concave and inclined inward and upward from its free edge, and extending in a direction opposite to and in the same plane as said weighted arms, whereby the guide block will normally hold the link in the proper position preparatory to coupling, substantially as specified. 2nd. In a car coupler, the combination, with the draw-head, of the shaft C journalled in bearings depending from the outer lower corners of the draw-head, and provided with the arms c, e and e , the guide block D for the link, which block stands downward when said arms stand upward, and outward when the arms stand inward, and the chain E extending downward from the end of the arm e to the staple e_1 , and then upward through the staples e_1, e_2 , to the top of the car, substantially as specified. 3rd. In a car coupler, the combination, with the draw-head having the openings b, b_1 in its roof and floor respectively, and the sleeve G standing vertically from the draw-head around the opening b and rectangular in cross-section, of the coupling pin F having the lower cylindrical portion f of the upper portion f_1 rectangular in cross-section and fitting in the sleeve G , and the circumferential shoulder f_2 , the chains H, H and I, and the levers h, h and i , all constructed and arranged substantially as and for the purpose specified. 4th. In a car coupler, the combination, with the draw-head, the sleeve G rectangular in cross-section, the tube J extending downward and inward from the sleeve, the detent J pivoted in said tube with its free end extending through a slot into the sleeve G , and provided with a staple j_1 extending out of a slot in the tube J , and the chains K passing through the staples k to the top and sides of the car, of the coupling pin having the part f_1 rectangular in cross-section fitting in the sleeve G , and provided on its rear or inner side with the transverse notch f_3 , and means substantially as described, whereby said pin can be raised as specified.

No. 31,953. Car Coupling. (Attelage de chars.)

Simon S. Lehman, Martineville, and Christian K. Herr, West Lampeter, Penn., U.S., 3rd August, 1889; 5 years.

Claim.—1st. In a car coupling, the combination, with the draw-head, of the sliding block B, means for moving and holding the same forward under the pin hole through which the pin e passes, the coupling pin e and the pin H located back of the said block B to hold the coupling link in the draw-head, substantially as specified. 2nd. The combination, with the draw-head of the sliding block B, a device for moving and holding the same forward under the hole through which the coupling-pin passes, the coupling-pin and the coupling-link secured in the draw-head behind the said sliding block, substantially as and for the purpose specified. 3rd. The combination, with the draw-head, of the sliding block, a roller pivoted in the bottom of the draw-head, and upon which the sliding block rests, the coupling link and pin, a yoke for raising the pin when the coupling is to be engaged, and a lever for operating the yoke, substantially as and for the purpose specified. 4th. In a draw-head, the combination, with the coupling pin and a yoke for raising the same, of a movable plate which forms a bearing for the rear end of the coupling link, and a device whereby the yoke may be raised and the said plate moved backward or forward, substantially as and for the purpose specified. 5th. In a draw-head, the combination, with the coupling pin, the yoke for raising the same, and a movable bearing plate for the rear end of the link, of the rock-shaft mechanism for operating the same, and connections between the rock-shaft and the yoke and bearing plate, whereby the shaft may raise the yoke and move the plate longitudinally in the draw-head, substantially as and for the purpose specified. 6th. In a draw-head, the combination, with the yoke for raising the coupling pin, and the movable bearing plate for the inner end of the coupling link of the rock shaft, a lever for engaging with and raising the yoke plates M connected with the rock-shaft, and provided with longitudinal slots and projections from the sides of the said bearing plate, which engage the longitudinal slots in the plate M, all arranged and constructed substantially as and for the purpose specified. 7th. In a draw-head, the combination, with the movable plate placed therein as a bearing for the inner end of the coupling link and the rock-shaft, of slotted plates M pivotally connected with the rock-shaft, and projections from the sides of the said bearing plate, which engage the longitudinal slots in the plates M, substantially as and for the purpose specified. 8th. In a draw-head, the combination, with the rock-shaft and the bearing plate, of slotted plates M connected with the rock-shaft, projections from the sides of the bearing plate, which engage the slots in the plates M, and latches adapted to engage the projections from the sides of the bearing plate when occupying its most forward position, the upper edges of the plates M being constructed to raise the latches as the said plates are moved backward, substantially as and for the purpose specified. 9th. The combination, with the coupling link, of a rocker H pivoted in the draw-head to regulate the position of said coupling link, a handle pivoted to the rocker and passing upward through a slot in the arm 15, the handle being provided with teeth adapted to mesh with a rack in said slot, and a spring for keeping the handle in engagement with the rack, substantially as and for the purpose specified.

No. 31,954. Radiator. (Serpentin.)

Patrick J. Kennedy, Detroit, Mich., U.S., 3rd August, 1889; 5 years.

Claim.—1st. In a radiator, consisting of two series of piping, B, T, the hollow casting A, and the hollow castings C and F, substantially as described. 2nd. In a radiator, the base A, screw-threaded apertures J, central aperture B, the central cast top C, the outer cast top F, the space H between the radiating pipes B and T, and an air valve or valves R, substantially as described. 3rd. In a radiator, the hollow tops C and F, radiating pipes B and T, each pipe having a long screw thread, and a lock nut L, a screw thread on the lower end and a base common to both series of pipes, substantially as described.

No. 31,955. Vending Apparatus.*(Appareil de vente.)*

John A. Williams, Brooklyn, N.Y., U.S., 3rd August, 1889; 5 years.

Claim.—1st. In a vending machine, the combination, with a reciprocating delivery slide, provided with a lug, as *h*, of a reciprocating operating slide, and a coin-holder secured to the operating slide in rear of the lug on the delivery slide, and adapted to hold and support the coin, whereby, when a coin of the requisite size is inserted, it will, upon movement of the operating slide, come into engagement with the lug on the delivery slide and actuate the latter. 2nd. In a vending machine, the combination, with the operating slide provided with the separated arms *p, p*, adapted to hold the coin by its side edges, of a lug *q* on the operating slide in advance of and midway between the arms *p, p*, and a delivery slide provided with a lug *i* in advance of and midway between the arms *p, p*, all substantially as shown. 3rd. In a vending machine, the combination, with a delivery slide, of an independent operating slide, a coin-holder secured to the latter and adapted to hold the coin in position to strike the delivery slide, and a lug, as *h*, secured to the latter, whereby, when the operating slide is released, the coin will strike the lug and be deposited in the box. 4th. In a vending machine, the combination, with a delivery slide and an operating slide adapted to be connected by means of a coin, of a locking device for holding the delivery slide in its extended position during the return movement of the operating slide. 5th. In a vending machine, in which the delivery and operating slides are connected by means of a coin, the combination, with said slides and a suitable coin holder, of a pawl or dog adapted to engage the delivery slide, said dog being arranged in position to be struck by the operating slide. 6th. In a vending machine, the combination, with the delivery and operating slides and their retracting springs, of a coin-holder secured to the operating slide, as and for the purpose set forth, and a pawl or dog to engage the delivery slide, and arranged in the path of the operating slide. 7th. In a vending machine, in which the delivery and operating slides are connected by a coin, the combination with said slides and their retracting springs, of the coin-holder secured to the operating slide, the lugs *h* and *i* secured to the delivery slide, and a pawl or dog to engage the delivery slide arranged in the path of the operating slide, whereby, when the latter is released, the coin will be discharged before the delivery slide begins to move backward. 8th. In a vending machine, the combination with the delivery slide, provided with a ratchet *e* and a spring and the operating slide, provided with a coin-holder and a spring and a pivoted pawl or dog, having a tail or arm to extend upward behind the operating slide. 9th. In a vending machine, the combination with the delivery slide provided with a ratchet and a spring, of the operating slide provided with a coin-holder, a pivoted pawl or dog provided with an arm to engage the ratchet, and an arm to extend upward behind the operating slide, and a spring connecting the said slide with the pawl. 10th. In a vending machine, the combination, with the delivery slide provided with lugs *h* and *i*, separated as shown, of the operating slide, provided with a slot *n* and arms *p, p* and a rib *q*. 11th. In a vending machine, the combination with a delivery slide and a slotted operating slide adapted to be connected by a coin, of the arms *p, p*, secured to the under side of the operating slide in line with the rear wall of the slot and a rib or lug *q* also on the under side of the slide, and adapted, if the coin be of the proper size, to hold said coin at its upper edge. 12th. In a vending machine, the combination, with the operating slide, provided with a slot *n*, arms *p, p*, and lug or rib *q* of the delivery slide, provided with a sharpened or pointed lug *i* to engage the coin. 13th. In a vending machine, the combination with the main plate *D*, provided with a coin slot *o*, of the operating slide provided with a slot *n* to register with slot *o*, and having its rear wall sharpened, as and for the purpose set forth. 14th. In a vending machine, the combination with the frame, of the parallel grooved guides *I* secured thereto and the operating and delivery slides mounted in said guides. 15th. In a vending machine, the combination with the frame *A*, of the plate *D*, the block *E* resting thereon, the operating slide beneath the plate and the delivery slide provided with a delivering frame *a, b* to rest upon the block, and with a plate *d, d*, to be engaged by the coin, the frame *a, b*, and plate *d, d*, of the delivery slide, being connected by an arm *c*. 16th. In a vending machine, the combination with the chutes and the block *E* below the same, of the delivery slide provided with a flat block and a forwardly-extending open frame, and means for actuating the slide. 17th. In a vending machine, the combination with the chutes and the block *E* of the delivery slide, the bolt or stem secured to the block and provided with a head or enlargement at its outer end, a spring coiled about the bolt and bearing at its ends against the block and a part of the slide, and means for actuating the slide. 18th. In a vending machine, the combination with the frame *A* having chutes *C*, of the block *E* below the chutes, having its front face curved, as shown, the door provided with a guard and the delivery slide interposed between the block and the chutes.

No. 31,956. Mechanism for Automatically Turning over the Leaves of Books and the like.*(Appareil pour tourner les feuilles des livres et autres choses semblables.)*

Thomas W. Tetley, Sheffield, Eng., 3rd August, 1889; 5 years.

Claim.—1st. The shaft *S*, combined with the series of cranks *T*, and corresponding balanced arms *U*, arranged substantially as described, whereby, on the rotation of shaft *S*, the respective projections *U* are brought nearer and consecutively into the required position on one side the shaft and further away from the centre on the other, for the purpose herein set forth. 2nd. The combination of the shaft *S*, having a series of cranks *T* thereon, with a corresponding number of balanced arms *U*, and operating mechanism for the purpose hereinbefore described. 3rd. The combination of a revolving threaded bar *4*, with balanced arms *U*, operated substantially in the manner and for the purpose as hereinbefore set forth.

No. 31,957. Device for Coupling Railway Cars.*(Appareil d'attelage des chars de chemin de fer.)*

Robert Matheson, Oxford N.S., 3rd August, 1889; 5 years.

Claim.—1st. The projecting plates *B* and *D*, the latter turning on a hinge or cam running into the shaft, and controlled by the spring, or, if desired, by weight and pulley, substantially as and for the purpose hereinbefore set forth. 2nd. The combination, with the plates *B* and *D*, of the pin *G*, substantially as and for the purpose hereinbefore set forth.

No. 31,958. Check Hook.*(Crochet de rênes.)*

Francis D. Clark, Sinclairville, and Frank E. Shaw, Dunkirk, N.Y., U.S., 3rd August, 1889; 5 years.

Claim.—A check-rein holder and stop, consisting of a hook, having the perforations or indentations *a* in the point of the hook, in combination with the open link *B* detachably secured in said perforation at one end, while the other end rests upon the main body of the hook to form a stop for the rein, as set forth.

No. 31,959. Car Coupling.*(Attelage de chars)*

Wiley M. Grisham, Samuel W. Peak and William H. Bates, Winchester, Ill., U.S., 3rd August, 1889; 5 years.

Claim.—1st. In a car coupling, the draw-head having a way for the coupling hook formed with an incline up which to direct such hook, and having a transverse horizontal opening or guide for the coupling pin, and the coupling pin movable in said guide, and provided with a flange or wing arranged in the closed position of the pin to form an extension or continuation of the incline for the coupling hook, substantially as set forth. 2nd. The combination of a draw-head, having a way for the coupling-hook, and a transverse guide or opening for the coupling pin, the coupling pin having a rack or series of teeth and the toothed wheel, substantially as and for the purpose specified. 3rd. In a car coupling, the draw-head having a transverse guide or opening for the coupling pin, and formed with an incline *d* leading up thereto, and with an incline *d* leading rearwardly and down from the upper end of incline *d*, combined with the coupling pin, substantially as set forth. 4th. The improvement in car couplings, comprising the draw-head, having a way for the coupling hook formed with an inclined bottom, and having a transverse pin opening *E* formed with a slot like extension *e*, and the coupling pin having a wing or flange *g*, all substantially as set forth. 5th. The improved car coupling, herein described, comprising the draw-head, having opening *E*, formed with extension *e*, the way *D*, having inclines *d, d*, and a shield or cover *F*, and the central link mortise, the coupling hook pivoted to said draw-head, the coupling pin *G* having flange or wing *g*, and provided with the rack or teeth, and the toothed operating wheel meshing said teeth, substantially as set forth.

No. 31,960. Steam Boiler.*(Chaudière à vapeur.)*

John Taylor, Troy, N.Y., U.S., and Tom H. Taylor, St. Catharines, Ont., 3rd August, 1889; 5 years.

Claim.—1st. A water tube steam boiler consisting of a group of inclined water tubes, a single water chamber at each end of the group into which the individual tubes all open, formed of sheets of wrought metal united at their edges and centrally cross-stayed, a row of horizontal water tubes connecting the upper parts of the chambers with each other, a steam drum, and connections leading thereto from the upper part of one of the water chambers, water supply pipes leading into the lower part of one of the water chambers, and a flame deflector extending transversely of the group of water tubes, consisting of sheets of wrought metal united at their edges to form a single water chamber, having a lower supply and upper discharge pipe, and centrally cross stayed and provided with tube receiving thimbles passing transversely through the chamber, substantially as described. 2nd. In a water tube boiler, the combination, with inclined water tubes supported at their ends by front and rear legs, of a flame deflector consisting of metal plates secured together to form a water chamber, tube receiving thimbles passing through the chamber, inlet water connections leading to the water chamber of the deflector, and outlet connections leading to the steam pipe, substantially as described. 3rd. In a water tube boiler having a front and rear water leg, and a super-heating steam drum, a steam tube having solid welded heads, and expanded nipple connections by which one end of the tube is connected with one of the water legs, and the other end with the steam drum, substantially as described. 4th. The combination of the front and rear water legs, the water tubes connecting the same, and the hollow water containing flame deflector between said legs, with the steam drum located between the front leg, and deflector above the grate, and communicating only with the rear water leg, substantially as and for the purpose described. 5th. The combination of the front and rear water legs, the intermediate hollow water holding flame deflector, and the grate supported on said deflector and front leg, with the inclined water tubes connecting the front and rear legs, and passing through the deflector but not communicating therewith, substantially as described. 6th. The combination of the front and rear water legs, and the intermediate water chamber flame deflectors, with the water tubes connecting said legs and passing through the upper portion of one deflector, and through the lower portion of the opposite deflector, but not communicating with either, substantially as described. 7th. The combination of the stationary front water leg, and the rear water leg, having an enlarged mud chamber at bottom, and mounted on a movable support, with the water tubes connecting said legs, the flame deflector, the steam drum located between the front leg and deflector, and the connections between said drum and rear water leg, substantially as described. 8th. In a boiler, a water circulating tube located above the grate, and in the water space of the boiler, and formed to be of less strength than

the other parts of the boiler, whereby it will break when it is subjected to undue steam pressure without danger or injury to other portions of the boiler, substantially as and for the purpose set forth. 9th. The combination of the front and rear water legs, and the intermediate hollow water holding flame deflectors, provided with horizontal hand holes at their upper ends, with the tubes connecting the front and rear legs, and passing through the deflectors, substantially as described. 10th. The combination of the front and rear water legs, and the intermediate water holding deflectors, the water tubes connecting said legs and passing through said deflectors, but not communicating therewith, with the steam tubes leading from the deflectors and front leg to the top portion of the rear leg, and the steam drum and pipe located above the deflectors and tubes, and communicating with the top of the rear water leg, substantially as described. 11th. The combination, in a tubular boiler, of the water legs and steam drum, with a fragile water tube located above the grate, and connecting the water legs of the boiler, and constructed to be of less tensile strength than the remaining tubes, for the purpose and substantially as set forth. 12th. The combination of the front and rear water legs, and the intermediate water containing deflectors, with the water tubes connecting the legs, but not communicating with the deflectors, the tubes connecting the deflectors respectively with the front and rear legs, and the steam drum communicating with the rear leg, substantially as specified. 13th. A hollow water leg for tubular boilers having its inner plate perforated in "staggered" order for the reception of the ends of the water tube, and its outer plate provided with oblique hand holes, substantially as and for the purpose described. 14th. The combination of the front water leg, the rear water leg having an enlarged mud chamber at bottom, and resting on a movable support, the water chamber deflectors between said legs, the water tubes passing through, but not communicating with, said deflectors, and connecting the front and rear legs, the water supply pipes to said legs, and deflectors, the steam drum located between the front leg and deflector above the grate, the steam tube connecting said drum with the rear leg, and the steam connections between said legs and deflectors, substantially as described. 15th. A water leg for tubular boilers composed of wrought metal plates rivetted together to form water-tight chambers, the inner plate having openings in it for the reception of the water tube ends made in "staggered" order, and the outer plate having oblique hand holes opposite a pair of openings in the inner plate, in combination with the obliquely arranged hand plates closing said holes, substantially as and for the purpose specified.

No. 31,961. Hose or Tubing. (*Boyaux ou tube.*)

Thomas Midgley and James E. Emerson, Beaver Falls, Penn., U.S., 3rd August, 1889; 5 years.

Claim.—1st. Hose or tubing composed of a body consisting of intertwined helices, stretched to their full extent and running diagonally around the tube, and a lining of fluid-repellent material, substantially as described. 2nd. Hose or tubing composed of a body consisting of intertwined elongated helices, running at an angle to the length, and also at an angle to a cross-section of the tube, a lining, and a covering of fluid-repellent material, substantially as described.

No. 31,962. Spring Scale. (*Peson à ressort.*)

Edward F. Bergman, Frankfort, and John R. Slack, Iilon, N. Y., U.S., 3rd August, 1889; 5 years.

Claim.—1st. The combination, with a suspension support, an outwardly projecting spring A, a weight support, and a connection or link connecting the weight support to the spring of a stationary scale, an oscillating indicator finger, and a connection pivoted to the indicator finger and to the spring, substantially as and for the purpose set forth. 2nd. The combination, with a weight support, a spring having opposite legs and a weight support, of the supports H and I, and an indicator finger F, substantially as and for the purpose specified. 3rd. The combination of a suspension support, a spring, a weight support, a scale or dial, an oscillating indicator finger, and an adjustable connection to said indicator finger, substantially as and for the purpose specified. 4th. The combination of a U-shaped spring, a weight support, and connections or links C, with a scale, an indicator finger, the lug or support H, and the adjustable support I, substantially as and for the purpose set forth. 5th. In a spring scale, the combination, of a weight support, and a spring having opposite legs, of an indicator finger, an adjustable support I, and a pivotally supported link G, substantially as and for the purpose described.

No. 31,963. Lock Case Attachment.

(*Disposition aux palastres des serrures.*)

Oscar Stoddard, Susan D. Bessimer and James S. Dewey, Detroit, Mich., U.S., 3rd August, 1889; 5 years.

Claim.—1st. In combination, with the lock-case and its key-hole, the pins a made fast to one part of said case, their free ends meeting the opposite face of said case, the metal plate B loosely mounted on said pins, said plate having the stud Z projecting from each face thereof, said plate being adapted to move from side to side of the lock-case by the action of the key, substantially as and for the purposes specified. 2nd. In combination with the lock-case and its key-hole, the pins or lugs crossing the interior thereof, the guard-plate loosely mounted on said pins, said guard-plate having the stud projecting from each face thereof, and adapted to enter the key-hole combined with the herein described key, substantially as specified.

No. 31,964. Steam Generator.

(*Générateur de vapeur.*)

Heine Safety Boiler Company, (assignee of Edward D. Meier, St. Louis, Mo., U.S., 3rd August, 1889; 5 years.

Claim.—1st The combination in a steam boiler furnace, of the fire-box, the combustion chamber H, the hollow bridge wall G, and the air flues I, K, L, and M, substantially as described. 2nd. The com-

bination in a boiler furnace, of the fire box F, the combustion chamber H, the air flues, and the steam jets P, substantially as and for the purpose specified. 3rd. The combination, with the lower tubes of the boiler, of the tiles S, the upper row of boiler tubes, and intervening tiles U, substantially as and for the purposes specified. 4th. The combination, with flues D, of the tiles S, the fire-box, and the combustion chamber, substantially as described. 5th. The combination, with the tubes D, of the tiles S, and anchor bars I, substantially as specified. 6th. The combination, with the "staggered" tubes of the boiler, of the large hollow stay bolts Ar, and a steam tube having axial and radial orifices, substantially as described. 7th. The combination of the upper and lower sections of the boiler, the fire-box and combustion chamber, the inclined roof of the fire-box, and the inclined partition in the upper part of the furnace, substantially as and for the purpose specified. 8th. A water tube boiler inclined as described, of a drum B, nest of "staggered" tubes D, and water legs C, Ci, substantially as described. 9th. The combination, of the adjustable tiles S and U, and tubes D, substantially as described. 10th. A water tube boiler consisting of the combination of front and rear water legs C and Ci, tubes D, and tiles S. 11th. The combination, in a water tube boiler, of the supporting bars X, roof tiles V and covering P, substantially as and for the purpose specified. 12th. The combination, with the rows of tiling, of the movable sections or sliding plates Sr, substantially as and for the purpose specified.

No. 31,965. Solid Vestibule Connection between Railroad Cars with flexible or adjustable joints to permit of sufficient movement between individual passenger Cars. (*Raccordement solide de vestibule entre les chars de fer avec joints élastiques pour permettre un mouvement suffisant à chaque char à passagers.*)

The Pullman Palace Car Company, (assignee of George M. Pullman,) Chicago, Ill., U.S., 3rd August, 1889; 5 years.

Claim.—1st. The combination, substantially as hereinbefore set forth, of a face-plate forming the open end of a vestibule-extension to a railway-car when not coupled with another car in a train, and a buffer-plate which is pivotally connected with a spring-extended buffer-rod, and arranged as described, to be capable of oscillating on a fixed centre, but restrained by guide-rods as described, to compel its centre of oscillation to move only in a line passing longitudinally and horizontally through the centre of the car, the said buffer-plate, and the face-plate of the vestibule connected therewith being free to move angularly with such fixed longitudinal line of their movement. 2nd. The combination, substantially as hereinbefore set forth, of a face-plate forming when railway-cars are not coupled, the open end of a vestibule-extension of a car, a buffer-plate pivotally connected with a spring-extended buffer-rod, and a threshold-plate, the said buffer-plate and threshold-plate being arranged as described, to be capable of oscillating on a fixed centre, but restrained as to other movements to one in a line passing longitudinally and horizontally through the centre of the car. 3rd. The combination of a face-plate forming when railway-cars are not coupled the open end of a vestibule-extension to a car, a buffer-plate pivotally connected with a spring-extended buffer-rod, and the said face-plate connected at its upper end with spring-extended guide-rods, substantially as described, and its foot to the buffer-plate, whereby the said face-plate is made capable both at its top and at its bottom to oscillate on a vertical central line, but is restrained as to other movements to one in a line passing longitudinally and horizontally through the centre of the car, substantially as hereinbefore described. 4th. The combination of a face-plate forming when railway-cars are not coupled the open end of a vestibule-extension to a car, and arranged as hereinbefore described to be capable of oscillating on a vertical central line, but restrained as to other movements to one in a line passing longitudinally and horizontally through the centre of the car, and a flexible bellows or equivalent extensible connection uniting the face-plate with the car-body structure, substantially as described. 5th. A vestibule-extension to a car-body which is made up of the following components: first, an extension of the car-body so as to practically inclose the entrance-platform and provided with doors at the sides, second, an extensible section of flexible material uniting the said extension of the car-body, with a face-plate which forms when railway-cars are not coupled the open end of the vestibule, third, the said face-plate combined with the car-structure and arranged as described to oscillate on a central vertical line but restrained as to other movements to one in a line passing longitudinally and horizontally through the centre of the car, and, fourth, a threshold-plate having the same movements and restraints as the said face-plate, substantially as described.

No. 31,966. Wire Body for Hose.

(*Enveloppe en fil de fer pour les boyaux.*)

Thomas Midgley and James E. Emerson, Beaver Falls, Penn., U.S., 3rd August, 1889; 5 years.

Claim.—As an improved article of manufacture, a tubular wire body for hose consisting of intertwined helices stretched to their full extent, and running diagonally around the tube, substantially as described.

No. 31,967. Base for Fence Posts.

(*Fonction pour les pieux des clôtures.*)

Charles S. Long, Aurora, Ill., U.S., 3rd August, 1889; 5 years.

Claim.—1st. A fence-post having a base of asphaltic concrete pressed thereon, as a new manufacture. 2nd. The method herein described of forming a base or support of asphaltic concrete on a metallic bar or rod, which consists in heating one end of said bar or rod and while the same is in a heated condition, pressing thereon a body or base of heated asphaltic concrete, as set forth.

No. 31,968. Process for Manufacturing Porous Earthenware Building Material. (*Procédé de fabrication de matériel poreux de construction en terre.*)

William Lenderoth, Deseronto, Ont., 3rd August, 1889; 5 years.

Claim.—The process, herein described, of forming porous earthenware, which consists in subjecting a mixture of clay, sand, saw-dust, and lime first, to such a degree of heat, as described, as will reduce the saw-dust to ashes, and will combine said ashes with the heated lime into a flux, and in afterwards increasing the temperature to cause said flux of lime and ashes to incrust and vitrify around the cells, without, at the same time, vitrifying the mixture of clay and sand, substantially as specified.

No. 31,969. Hammock. (*Hamac.*)

Thomas Fuller, Trenton, Ont., 3rd August, 1889; 5 years.

Claim.—1st. The combination of the post A, feet C, braces D and horizontal bars E and F and hammock B, substantially as and for the purpose hereinbefore set forth. 2nd. The combination, with the posts A, feet C, braces D, and horizontal bars E and F, with the cross bars G, horizontal rods H, inclined rods I and canopy covering J, substantially as and for the purpose hereinbefore set forth. 3rd. The combination, with the posts A and feet C, of the iron staples L and K, substantially as and for the purposes hereinbefore set forth.

No. 31,970. Freight Handling Apparatus. (*Appareil à transporter le fret.*)

Isaac Henderson, Vancouver, B.C., 3rd August, 1889; 5 years.

Claim.—1st. In a freight handling apparatus, the combination of a frame carrying endless chain tracks, double endless chain tracks B containing endless carrier chains, and provided with a driving apparatus, endless wheeled carrier chains jointed in plains at right angles to each other, and adapted to move in compound curves, and having notched pitch links, adapting them to be driven by gear wheel or chain and carrying projecting studs, driving apparatus secured to the tracks B and giving motion to said carrier chains, cages D pivotally secured at top and bottom to the projecting studs of the two carrier chains, and conveyers E, E', E'', etc., substantially as set forth. 2nd. The combination of the frame A, supporting a double endless chain track, and double endless chain tracks B of rectangular cross section with slot B¹ accommodating a carrier chain and secured upon said frame, curved and twisted in such manner as to pass from front to back of said frame, and through vertical and horizontal positions, substantially as set forth. 3rd. The combination of a frame A, supporting a double endless chain track, double endless chain tracks B secured to said frame and accommodating a carrier chain and curved and twisted in such manner as to pass from front to back of said frame, and through vertical and horizontal positions, an endless carrier chain in each track, consisting of forked and notched links C, C', jointed at their open ends by a pivot C¹ carrying a friction wheel C², and journalled upon axles C³ running upon wheels C⁴, said axle placed at a right angle to the pivot C¹, a driving chain B¹ gearing in the notched links, sprocket wheels B² carrying said driving chains, and carried upon axles B³ journalled to the rear of said track B, substantially as set forth. 4th. In an elevator, the combination of a frame A, supporting a double endless chain track, double endless chain tracks B accommodating a carrier chain and driving mechanism and endless carrier chain in each track, consisting of forked and notched links C, C' jointed pivotally at their open ends, and provided with a friction wheel C² and journalled upon axle C³, disposed at a right angle to the pivot joint and running upon wheels C⁴, and having projecting studs c⁵, driving chain B¹ gearing in the notched links, sprocket wheels B² carrying said chain and carried upon axles B³ journalled to the rear of the chain track, and the cages D having studs D¹ connected to studs c⁵, substantially as set forth. 5th. In a carrier chain, the combination of the forked notched links C, C', jointed pivotally at their open ends and having notches c¹, pivot C² connecting the open ends of said links pivotally and carrying a friction wheel, friction wheel C³ journalled upon the pivot C², between the prongs of the forks, axles C⁴ disposed at a right angle to the pivot C², and upon which the ends of the links C and C' are pivoted, wheels C⁵ journalled upon said axles and a stud c⁶ provided with friction wheel C⁶, substantially as set forth. 6th. A carrier chain, consisting of notched links jointed pivotally, and the pivot having a friction wheel journalled upon it, each pair of links carried at its ends by an axle upon wheels, said axle disposed at a right angle to the pivot joint, and one of said links provided with a projecting stud, substantially as set forth. 7th. In combination with the studs c⁵ of a carrier device, the bored studs D¹ at the rear of top and bottom of cage, arms d' joined together at the bottom stud, and bent at a right angle to form a graded floor, substantially as set forth. 8th. In a conveyor, the combination of the longitudinal pieces E, connected laterally and formed in a frame having a graded end, friction pulleys E¹ at each end of said pieces, cross shaft E², carrying pulleys e¹ and means for driving same, and endless chains E³ running over the pieces E and pulleys E¹ and e¹, substantially as set forth.

No. 31,971. Process for Strengthening Paper. (*Procédé pour renforcer le papier.*)

William H. H. Childs, Brooklyn, N. Y., U. S., 3rd August, 1889; 5 years.

Claim.—1st. A process of producing a waterproof fabric by passing sheets of paper or other fabric together, with one or more layers of bituminous or other waterproof material, and threads, cords, wires or other filaments, all simultaneously between a pair of rollers forming at point of contact a completed fabric, substantially as described.

2nd. A process of producing a waterproof paper fabric, by passing one or more sheets of paper through pressure rollers, threads or other filamentous strengthening material being fed between them, together with cementing material, the whole being subjected to proper pressure, substantially as described.

No. 31,972. Case for Bottles and other Vessels. (*Cave pour les bouteilles et autres vaisseaux.*)

William H. Hunt and James Lind, Liverpool, Eng., 3rd August, 1889; 5 years.

Claim.—1st. The combination of a vessel, with a case composed of a solid bottom, and wickerwork upper portion, substantially as described. 2nd. In the construction of casings for vessels, the combination of the wickerwork upper part with a solid bottom, substantially as set forth.

No. 31,973. Portfolio. (*Portefeuille.*)

George A. Auth, Lacon, Ill., U. S., 3rd August, 1889; 5 years.

Claim.—1st. The combination of the bottom strips e secured thereto, the hinged covers, nails or staples f secured to the strips e, sliding bars held on the covers and adapted to engage the staples f, and a turn button on the covers to normally hold said sliding bars in engagement with said staples, substantially as specified. 2nd. The combination of the bottom strips e secured thereto, the hinged covers, nails or staples f secured to the strips e, and sliding bars D, adapted to engage the staples f, and provided with the blocks a, b, c, d, the ends of which rest on the strips composing the covers, substantially as specified. 3rd. The herein described portfolio, comprising the slatted bottom A, having the rigid sides e and the hinged sides i, the slatted cover forming the top for the portfolio, said cover being made in overlapping sections, one section being hinged to one of the rigid sides e, and the other section being hinged to the side i, the staples f secured to the rigid sides, and the sliding bars on one of said sections, engaging the staples f, as set forth. 4th. In a portfolio, the slatted bottom A, the rigid sides e secured around three of the edges of the bottom A, the hinged side i secured to the other edge of the bottom, and the slatted cover, one section of which is secured to one of the rigid sides, and the other section is secured to the hinged side, the sections of the cover being secured together, as set forth.

No. 31,974. Electric Belt. (*Ceinture électrique.*)

Cyrus U. Hoke Reading, Penn., U. S., 3rd August, 1889; 5 years.

Claim.—1st. A medicated voltaic belt, consisting of a series of pockets, containing alternately suitable medicinal substances, and voltaic batteries connected by a conductor, substantially as set forth. 2nd. A medicated voltaic belt, consisting of a series of voltaic batteries suitably connected by a conductor, and secured in a belt of porous material, provided with pockets containing suitable medicinal substances adapted to come between said batteries, substantially as and for the purpose set forth.

No. 31,975. Bottle Cleaner. (*Laveuse de bouteille.*)

Walter D. Rutz, Norristown, Penn., U. S., 3rd August, 1889; 5 years.

Claim.—1st. The combination of the tapered cork, with sections of chains depending therefrom, substantially as set forth. 2nd. The combination of the cork, with sections of chains depending therefrom, and a brush, substantially as shown, extending from the opposite end of the cork, substantially as described. 3rd. The combination of the tapered cork, the wire B extending throughout the length of the cork, and having an eye to which is attached a chain, and sections of chains connected thereto with an eye at the opposite end of the wire, said wire forming the stock of a brush, substantially as shown and described.

No. 31,976. Cash Register. (*Régistre à monnaie.*)

John Sharpe, Toronto, Ont., 3rd August, 1889; 5 years.

Claim.—1st. The combination of the registering disks, the ratchet sleeves geared thereto, the finger keys and the ratchet bars attached to said keys, and adapted to engage and operate the sleeves, substantially as described. 2nd. The combination of the registering disks, the ratchet sleeve geared thereto, the finger keys and the ratchet bars attached to said keys and adapted to engage and operate the sleeves, the numbers of teeth on said ratchet bars being varied according to the respective values of the finger keys, for the purpose set forth, substantially as described. 3rd. The combination of the registering disks, the ratchet sleeve geared thereto, the finger keys and ratchet bars to partly rotate the sleeves on one stroke of the ratchet bars, and the link arms to engage and complete the rotation of the sleeves on the return stroke of the ratchet bars, substantially as described. 4th. The combination of the ratchet sleeves having the tappets, the registering disks geared to the said sleeve, the dogs adapted to be operated by the tappets, the spring-pressed rocking detent adapted to be engaged by the dogs, the finger-keys, the ratchet bars attached to and operated thereby, and adapted to engage and partly rotate the ratchet sleeves, and the link arms attached to the ratchet bars and having the shoulders to engage the ratchet sleeves, and the cams to engage the rocking detents, substantially as described. 5th. The combination of the ratchet sleeve, the finger keys, the ratchet bars attached to the keys and adapted to partly rotate the sleeves, and the link arms connected to the ratchet bars and having the shoulders adapted to engage and partly rotate the sleeves, substantially as described. 6th. The combination in a registering machine of the ratchet sleeves, the ratchet bars to engage the same when moved in one direction, the link arms attached to the ratchet bars, and automatically operating mechanism, connecting said sleeves to said link arms to cause the latter to engage and partly rotate the sleeves on the return stroke of the ratchet bars at prede-

terminated period of the revolution of the sleeves, substantially as described. 7th. The combination of the ratchet sleeves, the ratchet bars connected to the finger keys, and the tumbler sleeves to engage the ratchet bars on the up stroke of the latter and move said bars into engagement with the ratchet sleeves, substantially as described. 8th. The combination of the ratchet sleeves geared to the registering disks, the ratchet bars attached to and operated by the finger keys, and adapted to engage and rotate the ratchet sleeves, said ratchet bars having the stop teeth G5 to prevent excessive rotation of the ratchet sleeves, substantially as described. 9th. The combination of the ratchet sleeves geared to the registering disks, the ratchet bars attached to the finger keys, and having the cams E4 on their rear sides, and the guide having the cam faces to engage said cams E4 on the down stroke of the ratchet bars, and move the latter into position to engage the ratchet sleeves on their succeeding up-strokes, substantially as described. 10th. The combination of the ratchet sleeves geared to the registering disks, the ratchet bars having the teeth on one side to engage said sleeves, and having the teeth B4 on their reverse sides, the weighted ratchet tumbler sleeves having the teeth to engage the teeth B4 of the ratchet bars, and provided further with the teeth R3, and the pawls engaging the latter teeth, substantially as described. 11th. The combination in a registering mechanism of the shaft having the angular grooves N1, provided with off-sets O1, and the registering disks having the spring-pressed pins travelling in the grooves, and adapted to engage the off-set, substantially as described. 12th. The combination in a registering mechanism of the shaft, having the off-sets O1, the registering disks loose on said shafts, and the spring-pressed pins carried by said disks to engage the off-set and thereby carry the disks with the shaft when the latter is rotated in one direction, for the purpose set forth substantially as described. 13th. The combination of the shaft, the loose registering disks thereon, the devices to lock the disks to the shaft when the latter is turned in one direction, the detent to engage and lock the shaft at predetermined points of its rotation, the registering disks S5 loose on the shaft, and having the gear wheel and arms or pins R5, the latter corresponding in number to the points at which the shaft is locked, and the sleeves or gear having the pinion engaging the gear wheel, and the arms or teeth adapted to be engaged by the arms or pins R5, substantially as described. 14th. The combination of the shaft, the registering disks loose thereon, the devices to lock the disks to the shaft when the latter is turned in one direction, and the registering mechanism to indicate the position of the shaft, substantially as described. 15th. The combination of the prime moving registering disks, the sleeves geared thereto, the finger keys having the devices to positively rotate said sleeves, the secondary registering disks, and the gears connecting the same to the sleeves to rotate the secondary disks at predetermined intervals during the rotation of the sleeves, substantially as described. 16th. The combination of the banks of finger keys denoting values in units, tens, and hundreds respectively, the registering disks indicating corresponding values, and the connecting operating mechanisms between said banks of keys and their corresponding disks, whereby several values may be registered at once by operating one key of each bank, substantially as described. 17th. The combination of the banks of finger keys, one or more having the arms and connected to and adapted to operate the registering mechanism, the frames in which the arms are guided, and the swinging hangers arranged between the pairs of key arms, the said swinging hangers having limited lateral movement for the purpose set forth, substantially as described. 18th. The combination of the banks of finger keys, one or more having the arms and connected to and adapted to operate the registering mechanism, the frames in which the arms are guided, and having the stops and the swinging hangers pivoted to the frame, and arranged between the pairs of the key arms, said hangers having their lower ends bevelled the width of the hangers plus the width of one of the key arms, being about equal to the width of the space between the stops, whereby but one key of a bank can be operated at a time, substantially as described. 19th. The combination in a registering mechanism of the finger key arms, and the swinging hangers having limited lateral movement, and arranged one between each pair of arms, substantially as described. 20th. The combination of the finger key arms, and the spring-pressed pivoted lock plate having the off-set or cam, and arranged above the free ends of the key arms, substantially as described. 21st. The combination of the finger key arms, and the spring-pressed pivoted lock plate arranged above the normal position of the free ends of the arms, and having the depending flange below its pivots, and the off-set or cam above the same, for the purpose set forth, substantially as described. 22nd. The combination in a registering mechanism of the display tablet, the guides therefor, the weight levers attached to the tablets, the finger keys, the operating rods attached thereto, and the tumbler rods in the paths of the operating rods, and weight levers, substantially as described. 23rd. The combination in a registering mechanism of the tablets, the guides therefor, the tumbler rods, and connections to operate the tablets when said rods are raised, the collars or off-sets on the rods, and the spring-pressed trip bar having the cam in the parts of and above the collars or off-sets, substantially as described. 24th. The combination in a registering mechanism, of the tablets, the guides therefor, the weighted bell crank lever s, the links connecting the same to the tablets, and the tumbler rods, and operating mechanism, substantially as described. 25th. The combination of the finger keys arranged in banks of different values in units, tens, and hundreds, the revoluble sleeves, connections substantially as described, between the several banks of keys and their respective sleeves to partly rotate the latter when said keys are operated in one direction, the automatic devices to operate the sleeves at predetermined intervals of their rotation, and connected to the keys, and operated by the return strokes thereof, and the registering disks geared to the sleeves, substantially as described. 26th. The combination of the revoluble sleeves of different values, the finger keys, and connections to operate the respective sleeves, the automatic devices to complete the revolution of the sleeves at predetermined periods, the prime moving registering disks geared directly to the sleeves, and the secondary disks geared to each other and to the prime moving disks, substantially as described. 27th. The combination of the revoluble sleeves having the tappets, the prime moving registering disks geared to said sleeve, the dogs in the paths of the tappets, the detents normally en-

gaged by the dogs, the finger key arms, the ratchet bars attached thereto, and adapted to partly rotate the sleeves when moved in one direction, and the link arms connected to the said ratchet bars having the shoulders to engage the sleeves, and the cams or off-sets to engage the detents, substantially as described. 28th. In a registering mechanism, the finger keys having the pivoted lever and weight arms, and the bars Z attached to the weight arms, and bearing on the lever arms, substantially as described. 29th. The combination in a registering mechanism, of the drawer, the hinged plate to lock the drawer, the springs to open the plate, the hooks to engage the latter when the drawer is closed, the finger keys, the weight arms operated thereby, and the rods attached to the hooks, and adapted to be engaged and operate by the weight arms when the latter are raised for the purpose set forth, substantially as described. 30th. The case having the inclined bottom, the drawer resting on friction rollers thereon, the hinged plate to lock the drawer when closed, the finger key arms, the devices operated thereby to release the hinged plate, substantially as described. 31st. The combination of the gravity drawer, the hinged plate to retain the same when closed, the springs to open said plate, the tappets on the drawer and hinged plate for the purpose set forth, the hooks to engage and normally lock the plate, the finger keys, and the levers operated thereby, and connections between said levers and the hooks, substantially as described. 32nd. The combination of the drawer, the hinged plate to lock the same when closed, the tappets on the drawer and plate, the hooks to engage and lock the plate, the finger key arms, the weight arms operated thereby, and having the tappets A1, and the spring-pressed rolls R attached to the hooks, and adapted to be engaged and operated by the tappets A1, substantially as described. 33rd. The combination of the case having the lid, the registering disk having the gear wheels, the rod bearing against the lid, and having the pawl engaging the gear wheel, and the spring to move the rod when the lid is open, substantially as described. 34th. The combination of the case having the removable back, the registering disk having the gear wheel, the rod bearing against the back, and having the pawl to engage the gear wheel, and the spring to move the rod when the back is removed, substantially as described.

No. 31,977. Two-Wheeled Vehicle.

(Voiture à deux roues.)

Hjalmar Malmberg, Cortland, N.Y., U.S., 3rd August, 1889; 5 years.

Claim.—1st. In a two-wheel vehicle, the combination of a standard or standards F, F, and two springs I, I attached to the standard or standards F, F and to the seat-frame C, substantially as specified. 2nd. The combination of the seat-frame C, the thills K, K, the standard or standards F, F provided with hooks H, and the coiled springs I, I, substantially as specified.

No. 31,978. Combined Jointer and Side Dresser and Sharpener for Saws.

(Egulisoir et dressoir et affuteur combinés pour les scies.)

Emmanuel Andrews, Williamsport, and Harrison W. Georgia, Smith port, Penn., U.S., 3rd August, 1889; 5 years.

Claim.—1st. The combination, in a machine for jointing saws, of a fixed saw arbor, a movable standard vertically and horizontally adjustable with relation to the fixed saw arbor, and an adjustable jointer pivoted to said standard, substantially as described. 2nd. The combination in a saw jointer and side dresser, of clamping jaws for the saw file, guides upon the same for side dressing the teeth, and a swinging bar provided with a tooth guide for both long and short teeth, substantially as described. 3rd. In combination with a saw holding device, a saw sharpening guide frame, substantially as described. 4th. In combination with a saw holding device, a saw sharpening frame attached thereto, and adjustable horizontally in opposite directions, substantially as described. 5th. In combination with a machine for side dressing saw teeth, an adjustable saw sharpening frame with adjustable file guide, substantially as described. 6th. In combination with a machine for side dressing saw teeth, an adjustable swinging tooth gauge for both long and short teeth, substantially as described. 7th. A sharpening file, with clamping jaws, and a rod guide, substantially as described. 8th. In combination, a sharpening file, a rod guide attached to the same, a file guide upon the rod guide, and a guide frame for regulating the path of the file guide, substantially as described. 9th. In combination, a sharpening file, a file guide upon the rod guide frame, a swinging tooth stop guide, and a saw supporting and saw holding device, substantially as described. 10th. A combined jointer, side dresser and sharpening machine, composed of a base, a fixed arbor upon the base to support the saw, an incline upon the base for a sliding standard, a sliding standard carrying clamping jaws to hold the saw in position, a jointer to joint the teeth of the saw guides for side dressing, and an attached adjustable file frame to guide the sharpening file so as to file uniformly the face and back of each tooth without removing the file, substantially as described.

No. 31,979. Explosive and other Projectiles or Shells.

(Projectile ou bombe explosibles et autres.)

Frederick H. Snyder, Jersey, N.J., U.S., 3rd August, 1889; 5 years.

Claim.—1st. An explosive projectile so constructed that its explosion is consequent upon and the result of a calculated or predetermined depth of submergence. 2nd. An explosive projectile or shell, provided with a plug, diaphragm, or similar device, so arranged in combination with an electric battery and circuit and exploder that when, but not until, the projectile is submerged a predetermined depth, the said plug or its equivalent will be forced in by the fluid pressure to complete the circuit or make the battery active, substantially as hereinbefore described. 3rd. An explosive projectile or shell provided with an electric battery, and with means whereby, by

the submergence of the shell, water will be admitted to the same, and will connect two contact pieces and thus complete the electric circuit, substantially as hereinbefore described. 4th. A buffer or cushion composed of india-rubber, or other elastic material, and having holes or cavities extending wholly or partially through the same, and forming air-chambers, substantially as and for the purpose above specified. 5th. A buffer or cushion, as fourthly claimed, further provided with external grooves forming air-spaces, substantially as and for the purpose set forth. 6th. The combination, with a projectile, and a buffer or cushion in rear of the same, of a metal casing or tube enclosing the said buffer or cushion, capable of sliding on the projectile, and adapted to enter the rifle grooves of the gun, substantially as and for the purposes set forth. 7th. The employment in an explosive projectile or shell, of internal projections or ribs formed on a lining of plastic and elastic material, substantially as and for the purposes set forth. 8th. The cartridge provided with the improved buffer or cushion, and with the casing or tube, substantially as described and for the purposes specified.

No. 31,980. Tie for Securing Bags, Bales, etc.

(*Ligature pour attacher les sacs, balots, etc.*)

William Gibson, Adamsville, Que., 3rd August, 1889; 5 years.

Claim.—1st. The manner of constructing said apertures C, C, and openings thereto without slots, and their combination with the permanent noose formed without making a loop on the cord, as shown hereinbefore. 2nd. The said two knots or their equivalent *b*, *b'* to facilitate the getting hold of the cord in forming said noose, all substantially in the manner and for the purpose hereinbefore set forth.

No. 31,981. Bolt Locking Device.

(*Appareil pour arrêter les boulons.*)

Charles I. Penrose, Chatham, N.Y., U.S., 3rd August, 1889; 5 years.

Claim.—1st. The combination, with the adjacent ends of two connecting railway rails, and the fish-plates upon either side thereof, a bolt passed through said plates and rails, a bifurcated lever adapted to embrace the outer end of the bolt, a pin connecting the lever and bolt, a nut adapted to engage the screw-threaded inner end of the bolt, and to bear against the flanged base portion of the rail, substantially as shown and described. 2nd. The combination, with the two adjacent rails, and the fish-plates, a bolt passed through said rails and plates, a nut engaging the screw-threaded inner end of the bolt, a bifurcated locking lever, the arms of which are cam-shaped and adapted to embrace the end of the bolt, a pin or bolt passed through said cam-shaped ends of the lever, and through a transverse opening through the end of the bolt, substantially as and for the purpose specified.

No. 31,982. Hand Seeder. (*Semoir à bras.*)

Silas B. Rittenhouse, Liberty Mills, Ind., U.S., 3rd August, 1889; 5 years.

Claim.—1st. The combination of the bottom board of a seeding machine, having the opening *A*, the bottom plate *C* having a semi-circular opening, and the slide *D* having its front edge *d* concave, the shaft *e*, and the stirrer *k* thereon, substantially as described. 2nd. The distributor-wheel *F*, of sheet metal, having the ribs or ledges *f* of two thicknesses bent up and folded together therefrom and integral therewith, substantially as described. 3rd. The operating cord-guide *M* slotted for the passage of said cord, and secured to the bracket *I*, substantially as described. 4th. The combination of the shield *H*, with a handle *P*, substantially as described. 5th. The combination of the grain-controlling slide *D*, having lug *d*, and the rod *g*, with the adjustable stop guide *z*, substantially as described.

No. 31,983. Mechanism for Controlling the Motion and Use of Seats, Doors, Lids, and the like. (*Mécanisme pour contrôler le mouvement et l'usage des sièges, portes, couvercles et objets semblables.*)

Bertie Hallett, London, Eng., 3rd August, 1889; 5 years.

Claim.—1st. The combination of chair seat, door, or lid, moving about an axis outside itself, and horizontal or vertical, as the case may be, curved ratchet fast upon the said axis, locking lever adapted to engage with the said ratchet and to be released therefrom, rocking lever adapted to be locked by an eccentric fast upon the axis above mentioned, coin-guide and coin-seat, and projection thereupon, as the same is illustrated in Figs. 2, 3 and 4, and described therewith. 2nd. The combination of chair-seat, flap, or door, moving about an axis outside itself, and horizontal and vertical, as the case may be, toothed wheel or quadrant, locking lever having coin-seat, and projection, rocking lever adapted to be thrown by the motion of the flap, and coin-guide projecting from said lever, adapted to bear against the coin on the coin-seat, and by forcing it against the said projection to disengage the locking lever from the toothed wheel or quadrant, as the same is illustrated in the accompanying Fig. 5, and described therewith. 3rd. The combination of chair-seat, flap, or door, moving about an axis outside itself, and horizontal and vertical, as the case may be, toothed quadrant locking lever, coin seat, movable coin guide, and a link-and-lever device adapted to move the coin-guide, and coin projecting therefrom towards and against the locking lever for the purpose of disengaging the same from the toothed quadrant, as the same is illustrated in the accompanying Fig. 5, and described therewith. 4th. Releasing a door, chair-seat or flap by dropping a coin through a coin-slit on to a bracket which holds the said coin up until it has kept the locking catch out of the slit into which it (*G*, *c*, the catch) would have dropped and locked the door, chair-seat, or flap, if the diameter of the coin had not prevented it from so dropping, as set forth. 5th. The combination of drum fast on the chair side or

equivalent part of the article to be controlled as to its use, drum fast upon the chair-seat or equivalent part and adapted to embrace the said fast drum, coin slit in each drum adapted to coincide when the article is out of use, a catch carried by the outer drum and adapted to engage in the coin-slit in the fast drum unless the coin-slit be occupied by a coin of the proper diameter, and a coin rest, as set forth.

No. 31,984. Indicator and Recorder.

(*Indicateur et registre.*)

Solon M. Terry, Pittsfield, Mass., U.S., 3rd August, 1889; 5 years.

Claim.—1st. The combination, with the clock having the wide gear-wheel mounted on its mainspring shaft, and the plate *J* having the bearing in its lower end, of the screw having the collar, the screw cap, the revolving record-drum having the central pillar formed with the longitudinal threaded aperture, and the gear-wheel mounted upon said pillar, substantially as set forth. 2nd. The combination, with the clock having the wide gear-wheel mounted on its mainspring-shaft, of the bearing plate having the slot, and the bearing at the inner end of the said slot, and the reduced slot, the screw having the collar provided with the lug, the screw-cap, and the revolving record-drum having the central pillar formed with the longitudinal threaded opening, and the gear-wheel mounted upon it, substantially as set forth. 3rd. The combination, with the clock having the wide gear-wheel mounted on its mainspring-shaft, of the bearing plate formed with the main slot, and the bearing at the inner end of the said slot, and having the reduced slot, as described, the screw having the collar provided with the lug, the screw-cap formed with the concave inner end, and the revolving record-drum having the central pillar formed with the longitudinal threaded opening, and the gear-wheel mounted upon it, substantially as and for the purpose herein set forth. 4th. The combination, with the mechanism consisting of the parallel disks, the series of shafts mounted therein, and having the intermeshing pinions and gear-wheels, the first shaft having the large gear-wheel on its projecting rear end, and one of the said shafts having the lug secured upon it, the dial having the circular scales marked upon it, and the indicator-hands secured upon the outer ends of the said shafts, of the centrally-pivoted spring-actuated lever having the pointed marker at its lower end, and the mechanism consisting of the clock having the wide gear-wheel mounted on its mainspring-shaft, the plate *J* having the bearing in its lower end, the screw having the collar, the screw-cap, the revolving drum having the central pillar formed with the longitudinal threaded opening the gear wheel mounted upon said pillar, and the record band or strip of paper, or other suitable material, removably secured around the said drum, all substantially as set forth. 5th. The combination, with the mechanism consisting of the parallel disks, the series of shafts mounted therein, and having the intermeshing pinions and gear-wheels, the first shaft having the large gear-wheel on its projecting rear end, and one of the said shafts having the lug secured upon it, the dial having the circular scales marked upon it, and the indicator-hands adjustably secured upon the outer ends of the said shafts, of the centrally-pivoted spring-actuated lever having the pointed marker at its lower end, and the mechanism consisting of the clock having the wide gear-wheel mounted on its mainspring-shaft, the bearing plate formed with the wide slot, the bearing and the reduced slot, the screw having the collar provided with the lug, the screw-cap, the flanged drum having the central pillar formed with the longitudinal threaded opening, and the gear-wheel mounted upon said pillar, and the record-strip of paper or other suitable material removably secured around said drum, all substantially as and for the purpose herein set forth.

No. 31,985. Horse Shoe. (*Fer à cheval.*)

Anders Anderson, Copenhagen, Denmark, 3rd August, 1889; 5 years.

Claim.—Horse shoes, the wearing plans of which consist of wood edged in by iron or steel, substantially as and for the purpose hereinbefore set forth.

No. 31,986. Horizontal Sawing Machinery.

(*Scierie horizontale.*)

Frederick R. Lane, Woodborough, Eng., 3rd August, 1889; 5 years.

Claim.—1st. In horizontal sawing machinery, a portable structural frame consisting of sleepers *A*, ground rail *B*, and uprights *C*, rigidly tied together by rods *C* and *D*, substantially as described and illustrated in the accompanying drawings. 2nd. In horizontal sawing machinery, the combination with portable frame, such as described, of the saddle *t* provided with slides *G*, and screws *H* for raising and lowering said saddle, substantially as described and illustrated in the accompanying drawings. 3rd. In horizontal sawing machinery the mechanism for driving the saw consisting of a disc *J* provided with a swivel stud *j* working in a yoke *N* of the afore-described rectangular saw frame, said disc being rotated by a pulley *K*, and belt *L*, substantially as described and illustrated in the accompanying drawings.

No. 31,987. Kettle Lid. (*Couvercle de bouilloire.*)

Daniel Shaw, (assignee of John Knox), Almonte, Ont., 3rd August, 1889; 5 years.

Claim.—The combination of the tilting link *A*, connecting the boss of handle *C*, with the lid *B*, substantially as and for the purposes hereinbefore set forth.

No. 31,988. Time Index Marker.

(*In lex-marque-mesure.*)

Harry Wissemann and Emil Koenig, New York, N.Y., U.S., 5th August, 1889; 5 years.

Claim.—The combination, with a covering case, and a metallic frame secured therein, of a spring-actuated train of wheels mounted

on shafts journalled in said frame, and escapement consisting of a notched collar mounted upon an oscillating rod, and alternating beaters driven by said wheels, a pendulum and adjustable regulator, substantially as described, a scale of equal parts arranged to give faculty for properly adjusting said regulator, a dial index hand, and mechanical connections by which the hand is moved on said dial, as specified, and spring claps, whereby said dial is detachably fastened, all substantially as and for the purpose set forth.

No. 31,989. Feed Water Heater and Purifier. (*Réchauffeur et épurateur de l'eau d'alimentation.*)

Charles E. Ferreira, Morgan Park, Ill., U. S., 5th August, 1889; 5 years.

Claim.—1st. In a feed water heater, the combination of a water chamber, provided with a water inlet, a steam chamber under the water chamber provided with a steam inlet, a pipe communicating with the steam chamber and extending into the water chamber for conducting steam through the water, and an outlet for drawing off the water, substantially as described. 2nd. In a feed water heater, the combination of a water chamber provided with a water inlet, a steam chamber provided with a steam inlet, a pipe communicating with the steam chamber and extending into the water chamber for conducting steam through the water, a settling chamber, a pipe communicating between the water chamber and the settling chamber for conducting the water into the settling chamber, and an outlet for drawing off the water, substantially as described. 3rd. In a feed water heater, the combination of a water chamber provided with a water inlet, a steam chamber under the water chamber, provided with a steam inlet, a pipe communicating with the steam chamber, and extending into the water chamber for conducting steam through the water, a settling chamber under the steam chamber, a pipe communicating between the water chamber and the settling chamber for conducting the water into the settling chamber, and an outlet for drawing off the water, substantially as described. 4th. In a feed water heater, the combination of a water chamber, provided with a water inlet and a water outlet, and a pipe communicating with a boiler and extending into the water chamber for conducting steam through the water, and terminating in a horizontal nozzle above the water level, whereby the steam is distributed above the water and back pressure prevented, substantially as described. 5th. In a feed water heater, the combination of a water chamber provided with a water inlet and a water outlet, and a pipe communicating with a boiler and terminating in the water outlet, whereby steam may be introduced directly into the outflowing water to superheat it, substantially as described. 6th. In a feed water heater, the combination of a water chamber provided with a water inlet, a pipe communicating with a boiler, and extending into the water chamber for conducting steam through the water and terminating in a horizontal nozzle above the water level, and a pipe communicating with the boiler and terminating in the water outlet, substantially as described. 7th. In a feed water heater, the combination of a water chamber, provided with a water inlet, and a pipe for drawing off the water, terminating at its upper end at a point in the chamber between the surface and bottom of the water, and substantially below the surface, whereby the water may be drawn off and most of the impurities left, substantially as described. 8th. In a feed water heater, the combination of a water chamber provided with a water inlet, a steam chamber provided with a steam inlet, a pipe communicating with the steam chamber and extending into the water chamber for conducting steam through the water, a settling chamber under the steam chamber provided with a vertical partition, perforated in its lower portion, a pipe communicating between the water chamber and the settling chamber terminating at its upper end at a point in the water chamber between the surface and bottom of the water and an outlet for drawing off the water, substantially as described.

No. 31,990. Machinery for Forming and Reeling Ropes or Strands. (*Machine à former et tordre les câbles ou torons.*)

Moses H. Day, Brookline, Mass., U. S., 5th August, 1889; 5 years.

Claim.—1st. The flyer G, the transverse reel T, the screw U having the dog V, gearing giving simultaneous rotation to the reel and screw and the friction pulley R for regulating the speed of said reel and screw, combined with the two independent grooved capstans x, z, geared together and adapted to be driven at a constant speed, substantially as set forth, the reel screw capstans and gearing being all mounted in the flyer and participating in its movement about its axis, as described. 2nd. In a collapsible reel for receiving a rope or strand as produced in a machine, such as described, for forming ropes or strands, the combination, with the heads having mortises, of the semi-cylindrical blades having a tenon at each end to fit in said mortises, the tenons being secured by pins in the mortises of one head and detachable from the mortises in the other head, substantially as specified.

No. 31,991. Thrashing Machine. (*Machine à battre.*)

Franklin F. Landis, Waynesborough, Penn., U. S., 5th August, 1889; 5 years.

Claim.—1st. The combination of a thrasher cylinder and its concave, with a curved grate C and revolving fingers K, substantially as described. 2nd. The deflector J above the grate C, substantially as described. 3rd. The pendent partition H, substantially as described.

No. 31,992. Point for Switch Rails. (*Rail du milieu d'un croisement.*)

Timothy G. Palmer, Schultsville, N. Y., U. S., 5th August, 1889; 5 years.

Claim.—The combination, with the switch rail B, of a removable

point having an inclined side adjacent to the main rail of the track, and bolts for connecting the removable point to the switch rail, substantially as set forth.

No 31,993. Split Pulley. (*Poulie d'assemblage*)

James M. Pollard, George S. Trimble and Philip G. Russell, Washington, D. C., U. S., 5th August, 1889; 5 years.

Claim.—1st. In a split pulley, the two-part rim and two-part bushing provided with interlocking ribs, and grooves adapted to draw and lock the half rims together as they are forced endwise upon the bushing, substantially as and for the purpose specified. 2nd. A split or separable pulley, consisting of two duplicate portions constituting the rim, and two duplicate portions constituting the hub or bushing, and having inclined or wedge surfaces, whereby it is made self-tightening and tightening by the act of forcing the parts together, as set forth. 3rd. A split or separable pulley having interior doubly inclined mortises, and a separable bushing having exterior doubly inclined surfaces and bored to fit over or upon a shaft, as set forth. 4th. In a split or separable pulley, the two-part rim and the wooden bushing adapted to hold the rim parts together, having the grain of its wood at right angles to the shaft opening in the bushing and to the plane of division of the rim into its two parts, substantially as and for the purpose shown. 5th. In a split or separable pulley, the two-part bushing, with each part having a doubly inclined wedge shape, being tapered uniformly from end to end, and having on its inner side a longitudinal groove to partially enclose a shaft, and on its outer side being grooved, dovetailed or channelled longitudinally, in combination with the two half rims having their inner sides shaped to fit the bushing, so that as the rim and bushing are moved longitudinally with reference to each other, the parts of the rim will be drawn together, and the parts of the bushing will be forced towards each other substantially as and for the purpose specified. 6th. In a two-part split pulley, the two parts of the rim, each having a dovetailed or equivalent under-cut mortise, in combination with a two-part split bushing shaped exteriorly to fit said mortise, substantially as set forth and described. 7th. In a two-part split pulley, having a dovetailed or equivalent undercut wedge-shaped mortise in each part, a two-part split bushing shaped exteriorly to fit said mortise and bored to fit over or upon a shaft, the construction being such that when the bushing or other parts of the pulley are being put together, the bushing draws and holds the two parts of the rim forcibly together, and the rim draws and holds the two parts of the bushing firmly upon the shaft, as shown and described. 8th. In a split or separable pulley, in combination with the two halves of the pulley rim formed of layers of wood, glued and pressed together, the grain of the alternate layers crossing each other, and having undercut wedge-shaped mortises in each half, a separable bushing formed of wood, and having the longitudinal fibres or grain crossing the bore at a right angle thereto, whereby the tensile strength of the wood of the bushing is available for drawing the two parts of the rim together or towards each other, and the tensile strength of a part of the wood composing the rim is available for drawing the two parts of the bushing towards each other, as shown and described. 9th. A split or separable pulley, made in two equal or like halves united and held together solely by a split or separable bushing. 10th. A split or separable bushing, made in two equal and like halves, in combination with a rim also made in two equal and like halves, the bushing forming the sole connection between the two halves of the rim, and the rim forming the sole connection between the two parts of the bushing, as set forth. 11th. In a split pulley, in combination with the tapering bushing divided longitudinally into two parts, each part provided on its outer side with a longitudinal groove or channel, diminishing in width towards the larger end of the bushing, the pulley rim divided into two parts on a longitudinal plane at right angles to the plane of division of the bushing, each part rim being provided on its inner side with ribs to engage the opposite sides of the grooves in the outer sides of the bushing, substantially as and for the purpose described.

No. 31,994. Cutter Head and Means for Adjusting the Cutters of the Same.

(*Porte outil et moyens d'en assujétir les outils.*)

William R. Allen, Cape Vincent, N. Y., U. S., 5th August, 1889; 5 years.

Claim.—1st. The combination, with the planer head, of the rabbetted cap plates, the cutter blades and the springs interposed between the cap plates and the planer head, and adapted to engage the back edge of the cutter, substantially as specified. 2nd. The combination, with a planer head, of the cap plates, rabbetted as described, and being deepest adjacent to the rib forming the rabbet, the springs secured within the rabbetted portion of the caps, and the cutters arranged in advance of the springs, substantially as specified. 3rd. The combination, with a planer head, of the cutter blades, constructed as described, the cap rabbetted on its inner side and the springs having one end secured in the said rabbetted portion, and adapted to bear against the rib e, and their opposite ends curved forwardly to engage the rear edges of the cutters, substantially as specified.

No. 31,995. Safety Pole and Shaft.

(*Timon et limonière de sûreté.*)

John P. Kline, Texarkana, Ark., U. S., 5th August, 1889; 5 years.

Claim.—1st. The combination of the pole A, provided with the hitch rein holders a, hitch reins ar, perforated elevation or staple az and the guide D, rod B passing through perforated elevation az, and having on its front end the cap b fitting over the front end of said pole, its rear end screwed into or otherwise secured to the lock plate C, lock plate C having the base c, elevation ct and lock notch c2, spring plate E having the catch projection e and lugs et, wheels F having their peripheries partly concentric and partly eccentric, and provided with the upper and lower arms f and lock hooks f2, said wheels being pivoted immediately under said lugs, said arms being

provided with straps *f*, substantially as described. 2nd. The combination of the pole or shafts *A*, provided with hitch rein holders *a*, hitch reins *at* and guides *D*, rods *B* having on their front ends the cap *b* fitting over the front ends of said pole or shafts *A*, their rear end attached to the lock plate *C*, lock plate *C* having the base *c*, elevations *e* and lock notches *e2*, spring plates *E*, having the catch projection *e* and lugs *e1*, wheels *F* having their peripheries partly concentric and partly eccentric, and provided with the upper and lower arms *f* and lock hooks *f2*, said wheels being pivoted immediately under said lugs and said arms being provided with straps *at*, substantially as described.

No. 31,996. Instrument for Testing the Fairness of Steam Engine Crank-Shafts. (*Instrument pour éprouver l'ex. acétitude des manivelles des machines à vapeur.*)

John Paterson, San Francisco, Cal., U.S., 5th August, 1889; 5 years.

Claim.—1st. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame-work to be secured to the piston-rod, a pointer carried by the frame-work for centering on the crank-shaft, and a second pointer movable about the first as a centre for centering on the crank-pin, substantially as described. 2nd. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame-work to be secured to the piston-rod, a level on said frame-work for levelling it, a pointer carried by the frame-work for centering on the crank-shaft, and a second pointer movable about the first as a centre for centering on the crank-pin, substantially as described. 3rd. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame to be secured to the piston-rod, a rod extending parallel with the piston-rod, a pointer carried by the rod for centering on the crank-shaft, and a second pointer movable about the first as a centre for centering on the crank-pin, substantially as described. 4th. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame to be secured to the piston-rod, a rod extending from the frame in the horizontal plane of, and parallel with, the piston-rod, a level on the frame-rod, a pointer carried by said rod for centering on the crank-shaft, and a second pointer movable about the first as a centre for centering on the crank-pin, substantially as described. 5th. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame to be secured to the piston-rod, a rod extending from the frame in the horizontal plane of, and parallel with, the piston-rod, a sliding head adjustable on said frame-rod, a pointer carried by said head for centering on the crank-shaft, and a second pointer movable about the first as a centre for centering on the crank-pin, substantially as described. 6th. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame to be secured to the piston-rod, a rod extending from the frame in the horizontal plane of, and parallel with, the piston-rod, a sliding head adjustable on the frame-rod, a hub rotating in said head, a pointer carried by the hub for centering on the crank-shaft, a radial arm carried by said hub, a sliding head adjustable on the arm and a pointer carried by said last-named head for centering on the crank-pin, substantially as described. 7th. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame to be secured to the piston-rod, a rod fitted to the frame and adjustable lengthwise therein, said rod extending in the horizontal plane of, and parallel to, the piston-rod, a sliding head adjustable on said frame-rod, a hub fitted to and rotating on the sliding head, a pointer carried by the hub for centering on the crank-shaft, a radial arm carried by said hub, a sliding head adjustable on said arm, and a pointer carried by said last-named head for centering on the crank-pin, substantially as described. 8th. An instrument for testing the fairness of crank-shafts of steam-engines, consisting of a frame to be secured to the piston-rod, a longitudinally-adjustable rod carried by the frame and extending in the horizontal plane of, and parallel with the piston-rod, a sliding head adjustable on the frame-rod, a level carried by said head, a rotating hub on the end of the head, an adjustable pointer in said hub for centering on the crank-shaft, a radial arm carried by the hub and adjustable lengthwise therein, a sliding head adjustable on the arm, and an adjustable pointer carried by the last-named head for centering on the crank-pin, substantially as described.

No. 31,997. Electric Railway.
(*Chemin de fer électrique.*)

Sidney H. Short, Columbus, Ohio, U.S., 5th August, 1889; 5 years.

Claim.—1st. In a sectional double line electric railway system, the combination of two conductors cut at intervals into sections, switches between the sections, all the switches in one conductor being normally closed, and all the switches in the other conductor being normally open, and an electric generator in circuit with said conductors. 2nd. In a sectional double line electric railway system, the combination of two conductors cut at intervals into sections, switches between the sections, all the switches in one conductor being normally closed, and all the switches in the other conductor being normally open, an electric generator in circuit with said conductors, and an electric car in circuit with said conductors and said generator, and adapted to open and close the switches in the two conductors alternately as it travels over the road. 3rd. An electric switch consisting of the combination of the spindle or similar shaft, projections extending at right angles to said shaft, and at right angles to each other, and to electric contact rods at opposite ends of said spindle, and located in parallel planes and at right angles to each other, the planes being at right angles to the spindle. 4th. In a double line electric railway system, the two conductors extending from pole to pole of an electric generator cut at intervals into sections, which are provided with switches in pairs, the two switches of each pair being connected together, and so arranged that when one is open the other will be closed. 5th. In a double line electric railway system, the two conductors extending from pole to pole of an electric generator divided at intervals into sections, which are provided with switches in pairs, the two switches of each pair being so arranged that when one is open the other will be closed.

No. 31,998. Fifth-Wheel for Vehicles.

(*Rond d'avant-train de voiture.*)

Philip Doerson, Lancaster, Penn., U.S., 5th August, 1889; 5 years.

Claim.—1st. The combination, with the head blocks *I*, and axle *K*, of the pivoted upper circle *C*, radial extension *B*, and pivotal elements *d* and *dr*, and the lower circle *E*, and pivotal elements *g*, substantially as and for the purpose hereinbefore set forth. 2nd. The combination, with the upper circle *C*, lower circle *E*, and pivotal elements *d*, *dr* and *g*, with the guide-hook *l*, clamp-plate *n*, lugs *W*, *W*, and goose-neck *L*, substantially as and for the purpose hereinbefore set forth.

No. 31,999. Banjo, Guitar and such like Stringed Instruments.

(*Banjo, guitare et autres instruments à cordes similaires.*)

Isaac L. Ximenes, London, Eng., 5th August, 1889; 5 years.

Claim.—1st. A banjo, guitar, or similar stringed instrument having at its base hooks to which the ends of the strings are tied, a bridge with holes through which the strings are passed, and tuning pegs with projecting hooks on which bights of the strings are engaged, substantially as and for the purposes set forth. 2nd. For facilitating the tuning of a banjo, guitar, or similar stringed instrument, a bridge clamp which can be fixed by means of a nut, and screw at any part of the fret board, and which has a presser transversely adjustable, so that it can be by means of a nut on its screwed stem be made to press on any one of the strings, substantially as described.

No. 32,000. Car Brake and Starter.

(*Frein et impulseur de char.*)

Giovanni B. Siccardi, New York, N.Y., U.S., 5th August, 1889; 5 years.

Claim.—1st. The combination of a car with a gear wheel *b*, a clutch for locking said gear wheel to the axle, a pair of gear wheels *i*, *ir*, journaled to a vibrating bearing, one of said gear wheels being connected to a drum for winding up springs, substantially as specified. 2nd. A car having a vibrating diverging bearing for two gear wheels moved by an intermediate block, substantially as specified. 3rd. A car having a bearing with diverging arms, a sliding wedge for vibrating said bearing, a pair of gear wheels *i*, *ir* journaled therein, a spring mechanism connected to the gear wheels, and a gear wheel *b*, adapted to be connected to the car axle and to either of the wheels *i*, *ir*, substantially as specified. 4th. The combination of wheel *b*, and clutch *c*, with bearing *h*, wedge *j*, wheels *i*, *ir*, pulley *n*, chain *o*, notched bar *p*, springs *q* and pawl *r*, substantially as specified. 5th. In combination, with a gear wheel *b*, and internal clutch rings *P*, the lining *F* attached to the gear wheel, and the lining *Q* attached to the clutch rings, substantially as specified. 6th. The combination of wheel *b*, with sectional lining *F*, having step-shaped edges, and bayonet slot *d* for securing the lining to the wheel, substantially as specified. 7th. The combination of the following elements: a sectional gear wheel *b*, divided plate *br*, an inner lining *F*, and a clutch *P* having outlet lining *Q*, substantially as specified. 8th. The combination of sectional wheel *b* having disks *a*, and split and recessed hub *v*, with band *v2*, substantially as specified. 9th. The combination of arms *ms*, with hinge *mc*, which permits the bearing to be adjusted vertically, substantially as specified.

No. 32,001. Manufacture of Watch Case Lids or Bezels. (*Fabrication des couvercles des montres.*)

Frederic Ecaubert, Brooklyn, N.Y., U.S., 5th August, 1889; 5 years.

Claim.—1st. In the manufacture of watch case lids and similar articles, the combination, with the die having an interior surface corresponding to the exterior of the lid, of a roll corresponding in shape at its periphery to the interior of the rim of the watch case lid, and having a convex side to act against the concave interior of the lid, substantially as set forth. 2nd. In the manufacture of watch case lids or bezels, the combination, with a die corresponding in its interior shape to the exterior of the lid or bezel, of a face die against which the rim of the lid or bezel is formed, and a roller having offsets or shoulders on its periphery to form the inward flange around the rim of the lid or bezel, substantially as set forth. 3rd. In the manufacture of watch case lids or bezels, a die-shaped and ornamental in its interior surface corresponding to the shape, and ornaments to be put upon the exterior of the lid or bezel, in combination with a roller or rollers shaped around the periphery to correspond to the interior of the article, and convex at the back to press the metal into the recessed ornaments in the die, substantially as set forth. 4th. In the manufacture of watch case bezels or rings, the combination, with a die having an interior surface corresponding to the exterior surface of the ring or bezel, of one or more rollers acting within the ring to press the metal into the die, and form the rim or flange at the edge of the ring or bezel, substantially as set forth. 5th. In the manufacture of watch case bezels or rings, the combination, with a die having an interior surface corresponding to the exterior surface of the ring or bezel, of one or more rollers acting within the ring to press the metal into the die and form the rim or flange at the edge of the ring or bezel, and one or more rolls acting against the metal to bend the same conically to form the reflecting bezel, and the seat for the glass, substantially as set forth. 6th. In the manufacture of watch case lids or similar articles, a die having an interior surface corresponding to the exterior surface of the lid or bezel, in combination with rolls that act at their periphery to form the interior portion of the rim of the lid, and at the back to form the interior surface of the lid and press the metal against the interior surface of the die, substantially as set forth. 7th. In the manufacture of bezels or similar rings, a die having an interior surface corresponding to the

exterior surface of the article to be produced, and two annular and flat, or nearly flat, faces 14 and 15, in combination with the rolls employed to press the metal outwardly into the die, and a finishing roll having the two flat, or nearly flat, faces 16 and 17, substantially as set forth. 8th. The combination, with the die having an internal surface corresponding to the external surface of the watch case lid or other article, of a roll acting within the article to press the metal into the die, such roll having a convex back, and conical surface at 11, and a face die having a conical surface 10, substantially as set forth. 9th. A ring die having an internal surface corresponding to the exterior surface of the article to be produced, and broken apart at one place, so as to be capable of being sprung open to allow for removing the article formed up within it, substantially as set forth. 10th. In the manufacture of watch case lids and similar articles, the combination, with the die having an interior surface corresponding to the exterior surface of the lid, of a roll corresponding in shape at its periphery to the interior of the rim, of the lid or similar article, substantially as set forth. 11th. The combination, with the holding shells A and C, Fig. 11, of the ring die D, having an interior surface corresponding to the exterior rim of the watch case lid or bezel, in combination with the roller G, having an exterior surface corresponding to the interior of the rim, and the shield K for holding the central portion of the lid, substantially as specified. 12th. A die having an interior shape corresponding to the exterior shape of the rim of the watch case bezel, in combination with a roller for forcing the metal ring into such die, a roller for banding up the inner edge of the sheet metal, and giving to the same the shape of the finished article, and simultaneously forming the groove for the watch glass, substantially as specified. 13th. The annular die having an interior surface corresponding to the exterior surface of the article to be spun up therein, and hardened and broken apart into two or more sections, substantially as set forth.

No. 32,002. Weighing Machine.

(*Pont à bascule.*)

George P. Skipworth, Doncaster, Eng., 5th August, 1889; 5 years.

Claim.—1st. The combination in a weighing machine, of a table of calculated values, a line of rates and gearing by which the motion of a weight to or from the axis about which the machine beam oscillates is communicated *pari passu* to the said table, as set forth. 2nd. The combination in a weighing machine, of scale-pan beam, sliding weight table of calculated values, scale of rates, and mechanism adapted to move the weight and the table of calculated values at the same relative rates, as set forth. 3rd. The combination in a spring balance, of circular or straight scale of weights, movable index, calculated table of values, and gearing by which the said table is moved with the index, as set forth. 4th. The combination of index, dial, scale pan, rack actuated thereby, and engaging with a drum having a table of calculated values upon it, whereby the motion of the index about its axis is accompanied by a corresponding motion of the said drum about its axis, as set forth. 5th. The combination of spring index upon a bar adapted to be moved against the resilience of the spring in the act of weighing, and a rack upon said bar from which the motion of the index is communicated to a table of calculated values upon a drum, as set forth.

No. 32,003. Tram Car Starter.

(*Impulseur de char à ornrière.*)

Arthur A. Watkins, Hanover, Germany, 5th August, 1889; 5 years.

Claim.—1st. The variable ratio lever J, with its two fulcrum points *j, k*. 2nd. The clutching device to ratchet wheel, by means of the frame C, with the surface on which the wire rope rests at an incline to the perimeter of the wheel, the wire rope F and the pawl D, substantially as and for the purpose described. 3rd. The means of working and holding the frame C by the links *l* fixed to the end of the connecting rod I, and attached to the frame C, substantially as shown and described. 4th. The device of catch *a*, link *d* and pin *f*, by means of which the pawl D is held out of gear, for the purpose described. 5th. The combination of the spring X, and the swinging rod *z*, with the ring *c*, as described and for the purpose set forth. 6th. The front guiding gear for the draw bar, the combination hanging links R, with the roller Q, guide T, draw-bar L and the hook Y, substantially as shown and for the purpose described. 7th. The safety lever *q, o* as shown in Fig. 2, and for the purpose described.

No. 32,004. Railway Signal.

(*Signal de chemin de fer.*)

Thomas P. Curry, Danville, Ky., U.S., 5th August, 1889; 5 years.

Claim.—1st. In a signal apparatus, the combination of a shaft or rod carrying the signal, with an operating rod engaging therewith, and means for starting said rod into activity through virtue of a blow automatically delivered against the sustaining support of said rod substantially as described. 2nd. In a signal apparatus, the combination of an operating rod, having one or more teeth or ratchets in its sides, with a lever or levers for engaging said rod and supporting the same, and means for withdrawing the levers from support of the rod by a blow automatically delivered against them, substantially as and for the purpose set forth. 3rd. In a signal apparatus, the combination of an operating rod, having one or more notches therein, arms engaging said notches, a loose collar surrounding said rod, and means for raising said collar and for maintaining it in its raised position, substantially as and for the purpose set forth. 4th. In a signal apparatus, the combination of a shaft or rod carrying the signal, an operating rod and electrical mechanism for releasing a weight, so that it may drop from its support and start said operating rod into activity, substantially as described. 5th. In a signal apparatus, the combination of one or more contact strips with a revolving disk carrying one or more contact plates, and levers for shifting or "switching" the same to be operated by the wheels of passing trains, sub-

stantially as described. 6th. In a signal apparatus, the combination of levers 1 and 2, with suitable attachments, so arranged that a train passing over said levers in one direction will operate the signal while a train going in the opposite direction will have no effect on the signal, substantially as described.

No. 32,005. Metallic Lathing.

(*Lattis métallique.*)

Cyrus Kinney, Windsor, Ont., 5th August, 1889; 5 years.

Claim.—1st. A metallic lath, constructed of a sheet of metal, perforated, and with the lips of the perforations turned backwards to form a key on both sides of the lath, substantially as described. 2nd. A metallic lath, consisting of a sheet of metal, perforated, and having the lips of the perforation extending outwardly, the rounded shoulders *a* and spaces *c*, substantially as described.

No. 32,006. Suspensory. (*Suspensoir.*)

Arthur J. Wells, Syracuse, N.Y., U.S., 5th August, 1889; 5 years.

Claim.—1st. The combination of a pouch *a*, a non-corrosive loop *ci* and a leg strap *c*, substantially as and for the purpose described. 2nd. The combination of a pouch *a*, a loop *ci* and elastic loops or guards *d, d*, substantially as and for the purpose specified.

No. 32,007. Rotary Engine. (*Machine rotative.*)

John F. Hines, Sr., San Antonio, Texas, U. S., 5th August, 1889; 5 years.

Claim.—In a rotary engine, the cylinder having the ports G, the wall or offset *f* between them, and the recesses F on opposite sides of said offset, the steam chest, the valve I, the screw K to move the same over either or both of the ports, and the independent valved escape ports, in combination with the wheel mounted eccentrically in the cylinder, and having the guide recesses O in its heads, the block N in said recesses having the oblong slot *n* clearing the wheel shaft, and the radial piston M secured to opposite ends of the block, and working through openings in the periphery of the wheel, substantially as described.

No. 32,008. Combined Channelling and Gadding Machine. (*Machine à canneler et percer.*)

William L. Saunders, New York, N. Y., U. S., 5th August, 1889; 5 years.

Claim.—1st. The combination, with the engine-supporting frame, of a carriage on said frame, a drilling engine secured upon said carriage, an axial feed-screw upon which said carriage is pivoted, an internally screw-threaded gear wheel mounted upon said feed screw and secured to the carriage, and a beveled gear pinion also mounted upon said carriage and engaging the gear wheel, and having a hand crank extending therefrom, substantially as described. 2nd. The combination of a pair of parallel tubes or bars, and pieces supporting and uniting said bars, a direct acting percussion rock-drilling engine mounted upon said supports, a feed-screw passing through the axes of the end pieces to which said supports are secured, and end pieces within which said feed screw is immovably secured, substantially as described. 3rd. The combination, with suitable end supports, of the engine-supporting frame, consisting of tubes N, heads *n, n'*, provided with projections fitting into the said tubes, and the bolts passing therethrough, substantially as described. 4th. The combination, with a frame adapted to carry a drilling engine, of end supports formed with tubular bearings, laterally extensible arms in said bearings, the extremities of said arms being formed into leg bearings or supports, and supporting legs arranged to be adjustably secured therein, substantially as described. 5th. The combination, with an engine carrying frame, of end bearings to which said frame is pivotally connected, tubular supports attached to said end bearings, and laterally extensible leg supports fitting therein, substantially as described. 6th. In a drill carrying frame, castor wheels attached to each leg thereof, said wheels being formed with a radial perforation, and a leg pin arranged to fit into and project through said perforation to support the drill frame, substantially as described. 7th. In an engine carrying frame, legs therefor formed with bifurcation at their lower extremities, a supporting wheel for each leg, said wheels being provided with axial perforations, and having set screws passing longitudinally through or into the axes thereof, and leg pins arranged to pass through the said wheels, and to be secured in any desired position by the said set screws, substantially as described. 8th. In a drilling engine frame, the combination, with a supporting leg having bifurcated lower extremity, of a supporting wheel therefor formed with axial perforations extending therethrough, means for securing said axle in the bifurcated extremity of the supporting leg, a leg pin arranged to be inserted in the aperture extending through the wheel, and a set screw for securing the inserted pin in position, substantially as described. 9th. In a drilling engine, the combination of a shell having internal guideways, and a cross-head drill clamp having faces travelling in said guideways, and a removable dowel or shank extending between the piston rod and cross-head, substantially as described. 10th. In a drilling engine, the combination of a supporting shell having guides for the engine and cross-head, a cross-head having faces moving in the guide-ways and secured to the engine by a removable dowel or shank, substantially as described. 11th. In a drilling engine, the combination of a supporting shell having guides for the engine and cross-head, a cross-head, having faces moving in the guide-ways and secured to the piston by removable dowel or shank, and a drill clamp arranged to be secured to, and form part of the cross-head, substantially as described. 12th. In a drilling engine, the combination, with a shell extending below the feed of the engine, of a cross-head drill clamp supported and guided in said extended portion of the shell, and connections between the cross-head and piston-rod, consisting of a dowel or shank of less strength than the piston rod, substantially as described.

No. 32,009. Spark Arrester, Smoke Consumer and Fuel Saving Device to be Attached to Locomotive Portable, Stationary, Marine, and other Engines. (*Arrête-etincelle, foyer fumivore et appareil économique du combustible pour les machines locomotives, portatives, fixes, marines et autres.*)

Robert W. Smith, St. Thomas, Ont., 5th August, 1889; 5 years.

Claim.—The combination of the cover A, with the pipes B, B, and the fan F, substantially as and for the purpose hereinbefore set forth.

No. 32,010. Drive Chain. (*Chaîne sans fin.*)

George G. F. Boswell, Joseph E. Boswell and James F. Boswell, Indianapolis, Ind., U.S., 5th August, 1889; 5 years.

Claim.—1st. In a drive chain, the combination of two like links, each having a straight cylindrical bar at one end, a circular eye at the other end, and an intermediate opening adapted to receive the tooth of a sprocket wheel, and a separate plate arranged to connect said links, having a hook adapted to engage the straight cylindrical bar of one of the links, and a cylindrical boss adapted to engage the eye of the other link, and provided with retaining lugs, said hook and boss having their axes at right angles to each other, both projecting from the same side of the plate, and arranged substantially as shown and described, whereby one link, when connected with the hook on the plate, is held in place by the engagement of the next link with the boss on said plate, substantially as specified. 2nd. In a drive chain, the link having bar *b*, the link having eye *d* and recesses *f, j*, and the plate having hook *f*, boss *h* and lugs *k, k*, all combined and arranged to co-operate substantially as specified.

No. 32,011. Trace Buckle. (*Boucle de trait.*)

Edward R. Leiblein, Cleveland, Ohio (assignee of James F. Bartlett, Chicago, Ill.), U.S., 5th August, 1889; 5 years.

Claim.—1st. The combination, with a trace buckle frame, provided with the loop *a* at one end of the frame, of an eccentric cam and its lever hinged to the end cross-bar of the frame adjacent to said loop, and adapted to deflect the trace obliquely against said loop, substantially in the manner shown and described. 2nd. The combination, with the trace buckle frame provided with a loop *a* at one end, and a loop *a* placed inward from said loop *a*, of an eccentric cam and its lever hinged to a cross-bar of the frame, which is placed on the frame at a point between said loops, said cam being adapted to deflect the trace into the open space between said bridges, substantially as in the manner shown and described. 3rd. The combination, with the trace buckle frame provided with a loop *a* at one end, and a loop *a* placed inward from said loop *a*, of an eccentric cam and its lever hinged to a cross-bar of the frame attached between said loops, said lever being provided with a tongue *d*, as and for the purpose specified. 4th. The buckle, composed of the frame formed of side bars and end bars, and having the loops *a, a*, said loop *a* being connected to the frame near one end of the bars, and extending obliquely from the frame and said loop *a* being attached to the same side of the frame, and on opposite side of the end bar from the loop *a*, in combination with an eccentric cam *D* hinged to said cross-bar, and provided with a lever on plate *D'*, the said cam being opposite to the open space, between the loops *a, a*, substantially as and for the purpose specified.

No. 31,012. Broom Sewing Machine.

(*Machine à coudre les balais.*)

The Hand Stitch Broom Sewing Machine Company, Pittsburgh, Penn., (assignee of Charles E. Lipe, Syracuse, N.Y.), U.S., 5th August, 1889; 5 years.

Claim.—1st. In a broom sewing machine, a pair of pressing levers provided with pressing pads, and adapted to raise or drop said pads at will either bodily with said levers, or by sliding thereon to press the broom at any desired point. 2nd. In a broom pressing vise, a pressing lever provided with an eccentric bush, or bearing adapted to adjust said levers to any desired thickness of broom. 3rd. In a broom sewing machine, a broom holding vise, swinging clamps, clamp lifters, and an operating lever adapted to move said lifters in suitable guides upward and inward, thereby wedging said clamps against the broom. 4th. The combination of a broom-holding vise, swinging clamps, clamp lifters, and an operating lever. 5th. A broom-holding vise provided with swinging clamps, each clamp having lugs to hold the preceding clamp in place against the broom. 6th. In a broom-sewing machine, a broom-holding vise provided with swinging clamps, and mechanism for retaining the same in contact with the broom after the pressing mechanism has been released. 7th. In a broom-holding vise, movable or yielding spurs to hold the bands to allow the needle to pass under band. 8th. In a broom-holding vise, swinging clamps provided with movable or yielding band-supporting spurs to hold up the bands. 9th. The combination of a handling hook, with a broom-holding vise, and pressing levers. 10th. In a broom-sewing machine, a pivoted or mechanically guided banding hook. 11th. In a broom-sewing machine, mechanism substantially as described, for automatically adapting itself to any thickness of broom, guiding the same centrally, while being stitched and resisting the thrust of the needle from either side. 12th. The combination of the carriage *3*, pinch-levers *116, 117*, threaded stud *122*, threaded sliding wedge *124*, spring *125*, and broom-holding vise, operating as and for the purpose set forth. 13th. The combination of a pivoted broom-holding vise, with a flexible cord or chain resting on fixed supports or sheaves on each side of the broom, thereby forming a loop in which said vise may rest, the chain or cord adapting itself to the movements of

the broom, and feeding the same past the stitching mechanism when the loop is shortened, by operating on the free end of said cord or chain. 14th. In a broom-sewing machine, a pivoted broom-holding vise resting on a feeding chain, combined with a ratchet wheel and feed pawl, and means, substantially as described, for engaging or releasing said chain with said feed mechanism at will, operated as described. 15th. In a broom-sewing machine, a needle operated directly by a rotating crank-shaft, and an intermediate connecting rod. 16th. In a broom-sewing machine, a crank-shaft, connecting rod, and needle-driver on one side of the broom, and a duplicate system on the other side, combined with a needle and suitable mechanism for switching said needle into gear alternately from one system to the other. 17th. The main shaft *2*, crank-shafts *4, 5*, connecting rods *6, 7*, needle drivers *80, 81*, switch rods *84, 85*, cams *86, 87*, and needle *74*, operating as and for the purpose set forth.

No. 32,013. Fertilizer Distributer.

(*Distributeur d'engrais.*)

Harry Watkins, Phoenix, N.Y., U.S., William Joselyn, Bedford, Que., and Daniel H. Gowling, Syracuse, N.Y., U.S., 5th August, 1889; 5 years.

Claim.—1st. The floor *G* composed of slats *g*, in combination with the chain *F* secured to the top of the floor *G*, substantially as and for the purpose specified. 2nd. The floor *G* composed of slats *g*, having the edges *g*, in combination with the chain *F* secured to the floor, substantially as and for the purpose specified. 3rd. The floor *G* composed of slats *g*, having the edge *g*, in combination with the chain *F* secured to the top of the floor, substantially as and for the purpose specified. 4th. In a fertilizer distributer, a beater *R* composed of an endless apron *V*, and spikes or teeth *h, h*, substantially as and for the purpose specified. 5th. In a fertilizer distributer, a floor *G* in combination with the beater *R*, composed of an endless apron *V* at an angle with the floor *G*, and spikes or teeth *h, h*, substantially as and for the purpose described. 6th. In combination with the travelling floor *G*, the shafts *r, r*, sprocket or chain wheels *T, T*, endless chains or belts *U, U*, slats *V*, having teeth or spikes, substantially as and for the purpose specified. 7th. In combination with the travelling floor *G*, a beater *R*, and diagonally arranged beater teeth, substantially as and for the purpose described. 8th. In a fertilizer distributer, a beater tooth *h*, having the flat edge *h*, and the bevelled portion *h*, substantially as specified. 9th. In combination with the body *B*, and the floor *G*, a beater *R* and yielding journal boxes *i, i*, substantially as and for the purpose specified. 10th. In combination with the body *B* and floor *G*, the floor propelling wheel *E* and a beater or rimless idler *H* substantially as specified. 11th. In combination with the body *B* and the floor *G*, a beater *R* supporting brackets *S, S*, yielding journal boxes *i, i*, and pivot screws *R, R*, substantially as and for the purpose set forth. 12th. The combination of the main driving axle *A*, travelling floor *G*, floor-driving shaft *D*, worm-wheel *I*, bevel-gear *L*, counter shaft *O*, bevel pinions *e*, cone of gears *8, 9, 10*, and supplemental counter shaft *O*, a pinion *12*, an intermediate gear *15*, and a worm *11*, substantially as and for the purpose specified. 13th. The combination, with the counter shaft *O*, the cone of gears *8, 9, 10*, having the circumferential grooves *o, o*, the intermediate gear *15* having the flange *o*, the shaft *O*, the pinion *12* having the flange *O*, substantially as and for the purpose set forth. 14th. The combination of the shaft *O*, the cone of gears *8, 9, 10*, and grooves *o, o*, the intermediate gear *15* having the flange *o*, the shaft *O* having a screw-threaded extremity, and the pinion *12* having the flange *O*, substantially as and for the purpose set forth. 15th. In combination with the body *B*, and journal boxes *N, N* secured thereto, the shaft *O*, the cone of gears *8, 9, 10*, having grooves *o, o*, the shaft *O*, the pinion *12* having the flange *O*, the journal *13*, the lever *14*, and the intermediate gear *15*, having the flange *o*, substantially as and for the purpose specified. 16th. In a fertilizer distributer, the vibratory comb *C* having flat spring teeth *t, t*, substantially as and for the purpose set forth. 17th. In a fertilizer distributer, the combination of distributing mechanism, and wheels *W, W*, of the pivoted forward axle, and the forward wheels *W, W*, substantially as and for the purpose set forth. 18th. In a fertilizer distributer, the combination, with distributing mechanism, and actuating wheels *W, W*, of the forward wheels *W, W*, forward axle *A*, standard *5*, bolster *B*, and journal bearing *7*, and a nut *30*, substantially as and for the purpose set forth. 19th. In a fertilizer distributer, the combination of the moving floor *G*, axle *A*, traction wheel *W*, of the washer *50*, and the pin *51* having threads upon one extremity, substantially as and for the purpose described. 20th. The combination of the moving floor *G*, and operating cross-shaft *D*, driving axle *A*, connecting shaft *O*, and the eccentric *22*, substantially as and for the purpose described. 21st. In combination with the moving floor *G*, the actuating cross-shaft *D*, driving axle *A*, shaft *O*, eccentric *22*, lever *u*, a rod *v*, substantially as and for the purpose specified. 22nd. In combination with the moving floor *G*, driving axle *A*, and loose wheel *W*, of the clutch *b*, and the lock *d*, substantially as and for the purpose described. 23rd. In combination with the moving table *G*, the shaft *D*, the axle *A*, shaft *O*, and loose traction wheels *W*, of the eccentric *22*, lever *u*, rod *v*, the clutch *b* and the lock *d*, substantially as and for the purpose specified. 24th. In combination with the moving table *G*, driving axle *A*, loose wheel *W*, of the clutch *b*, the lock *d*, the rods *g*, levers *p*, toggles *p*, substantially as and for the purpose set forth. 25th. In combination, with the moving table *G*, driving axle *A*, loose wheel *W*, of the clutch *b*, the lock *d*, the rods *g*, levers *p*, rods *r*, springs *s*, and lock *u*, substantially as and for the purpose described.

No. 32,014. Blank Heading Die.

(*Etampe pour les ébauches.*)

The American Screw Company, (assignee of Charles D. Rogers), Providence, R.I., U.S., 5th August, 1889; 15 years.

Claim.—1st. The improved die hereinbefore described having guides in its head-forming cavity, substantially as and for the purpose set forth. 2nd. A die in which the heads of blanks or nails are formed, having guide ribs arranged to laterally support the wire or

stock *is*, and centralize it while being subjected to the action of the heading-hammer, substantially as hereinbefore described. 3rd. A die of the class described having the head-forming cavity, provided with a series of ribs for guiding the wire or stock laterally, and adapted to be impressed into the head of the blank during the heading operation. 4th. The combination in a machine for making headed blanks or nails, of actuated dies, substantially as hereinbefore described, having a head-forming cavity provided with guide-ribs, for the purpose specified.

No. 32,015. Snow Guard. (*Garde-neige.*)

Thomas O'Gara and Orlando W. Norcross, Worcester, Mass., U.S., 6th August, 1889; 5 years.

Claim.—1st. A snow-guard consisting of a strip of sheet-metal, having holding ears at its upper end projecting back of its under surface, adapted to catch and hold over the upper edge of the bottom slate, and also provided with a suitable bracket or snow-stop at its lower end, the sheet-metal strip being adapted to be passed up under the edges of two abutting slates, with the aforesaid snow-stop projecting up through the joint between them above the surface thereof, substantially as set forth. 2nd. A snow-guard comprising in combination, the sheet-metal strip *b* having its upper end cut to produce the ears *d, d*, projecting back to form hooks adapted to catch and hold over the upper edge of the bottom slate, and said upper end of the main strip bent forward for the purpose specified, said strip also being provided at its lower end with a longitudinal socket, and the wire part *c* bent to form a holding loop or snow-stop, and straight ends at about right angles thereto, adapted to be inserted into the aforesaid socket to hold said wire part in position, substantially as set forth. 3rd. The sheet-metal strip *b* having the ears *d, d* projecting back from its upper end, and a longitudinal holding socket upon the face of its lower end, in combination with the wire part *c*, bent in such a manner as to form a snow-stop, and to be inserted into the holding socket aforesaid, substantially as and for the purpose set forth.

No. 32,016. Device for Cutting the Edges of Sealed Envelopes and other Articles. (*Outil pour couper les enveloppes cachetées et autres objets.*)

Frank Armstrong, Bridgeport, Conn., (assignee of James S. Holmes, Buffalo, N.Y., U.S.) 6th August, 1889; 5 years.

Claim.—1st. The combination of the cutter *G*, the knife *K*, and the fixed gauge *B*, for the purpose and substantially as set forth. 2nd. The combination of a base *A*, provided with posts *G*, with a frame *I* provided with sleeves *J*, for the purpose and substantially as set forth. 3rd. The combination of the frame *I*, provided with a knife *K*, with bolt *O* operated by a spring *N*, for the purpose and substantially as set forth. 4th. The combination of base *A*, provided with a gauge *B*, cutter *C*, slot *F*, and post *G*, the frame *I* provided with sleeves *J*, the knife *K*, and the spring *N*, and bolt *O*, for the purpose and substantially as set forth.

No. 32,017. Primary Battery for Producing Electricity and Solution for Charging the same. (*Pile électrique et solution pour la charger.*)

Charles Norsworthy and John C. Lindop, (assignees of William Morrison), St. Thomas, Ont., 6th August, 1889; 5 years.

Claim.—1st. The combination of the three porous cups *P*, and the zinc *c*, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the crank-rod *A*, and the double chain *B*, substantially as and for the purpose hereinbefore set forth. 3rd. The constituent parts of the solution specified in the following proportions:

| | |
|--------------------|--------------------|
| Nitrate of soda | (1) one part. |
| Sulphide of soda | (1) one part. |
| Chloride of sodium | (1) one part. |
| Perchloride of tea | (4) one half part. |
| Sulphuric acid | (6) six parts. |
| Nitric acid | (8) eight parts. |
| Water | (6) six parts. |

substantially as and for the purpose hereinbefore set forth.

No. 32,018. Ice Cream Freezer.

(*Congélateur de crème.*)

Charles G. Shepard and Walter J. Shepard, Buffalo, (assignees of Henson C. Condon, Rochester), N.Y., U.S., 6th August, 1889; 5 years.

Claim.—An ice-cream freezer, consisting of a can, and a shaft having radial arms upon its opposite sides, bearing in one set of radial arms a freely-revolving dasher, pivoted on an axis parallel with the shaft, and bearing in the other set of arms a scraper, all combined substantially as and for the purpose described.

No. 32,019. Lamp for Burning Mineral and other Oil. (*Lampe pour brûler les huiles minérales et autres.*)

George Rose, Glasgow, Scotland, and James Sinclair, London, Eng., 6th August, 1889; 5 years.

Claim.—1st. In lamps for burning mineral or other oil in the form of vapor, a reservoir and a rectangular arranged tubular vaporizing chamber connected therewith, and superposed above the burner, substantially as hereinbefore described. 2nd. In lamps for burning

mineral or other oil in the form of gas or vapor, the modified splitting construction of vapor chamber, substantially as hereinbefore described. 3rd. In lamps for burning mineral or other oil in the form of vapor, the modified ring, and tubular box, construction of vapor chamber having easily removable lids for cleaning purposes, substantially as hereinbefore described. 4th. The combination, with the vapor generating chamber, of an oil warming or heating coil pipe *H*, or its equivalent, and a vapor burner *L*, the flume issuing from which heats said coil and chamber, substantially as hereinbefore described. 5th. In a lamp for burning mineral or other oil in the form of vapor, the fitting substantially in the manner hereinbefore described, of an accumulator in connection with the vapor chamber, for the purpose of keeping an even flow of vapor to the flame and thus conduce to the steadying of the light. 6th. In lamps for burning mineral or other oil in the form of vapor, the fitting in connection with the vapor chamber or its accessory parts, of a drip tube or chamber, substantially in the manner and for the purposes hereinbefore set forth.

No. 32,020. Door Key. (*Clé de porte.*)

Oscar Stoddard, Anson D. Bessimer and James S. Dewey, Detroit, Mich., U.S., 6th August, 1889; 5 years.

Claim.—A door-key comprising the following elements: the shank, the wing attached thereto, the stem *d* having the reduced end *a* with annular shoulder, the auxiliary wing having the hole *e*, the reduced end *c* being upset therein, substantially as and for the purposes specified.

No. 32,021. Pulping Engine. (*Machine à pulpe.*)

James H. Annandale, Polton, Scotland, 6th August, 1889; 5 years.

Claim.—A pulping engine comprising in combination, a vertical cone-shaped casing with its larger end uppermost, and with closed ends, a feed hopper at the side of, and extending higher than, the casing, with its lower end communicating with the lower part of the casing, a regulatable discharge valve communicating through the conical casing and distributed regularly round it, a rotating vertical cone-shaped roll provided with knives distributed regularly round it, the said roll having its knives fitted to move nearly in contact with the fixed knives of the casing, a shaft on which the roll is fixed and which extends through stuffing boxes in the closed top and bottom of the casing, and means of adjusting the shaft, the several parts being arranged and operating substantially as and for the purposes hereinbefore described.

No. 32,022. Corset. (*Corset.*)

Albert D. Nason, Springfield, Mass., U.S., 6th August, 1889; 5 years.

Claim.—1st. A corset having the swell of the breast portions detached from the clasp portions at the front edge, the stiffening material between the breast portions and the portion of the breast section below detached on a diagonal line running from the lower end of the detached edge of the said breast portions upward and backward to the rear edge of the said breast portions, and whereby a diagonal hinge is formed between the said breast portions and the portion of the breast section below, substantially as described. 2nd. A corset having the swell of the breast portions detached from the clasp portions at the front edge, with a reinforcing strip extending from the lower end of the detached edge of the said breast portions diagonally upward and rearward to the rear edge of the breast section, the stiffening of the swell portion of the breast and of that portion of the breast section below detached at the said diagonal line, and whereby a hinge is formed on said diagonal line upon which the said breast portion may swing downward and backward in opening, substantially as described. 3rd. A corset having the swell portion of the breast detached from the clasp portions at the front edge, an overlay *F* extending from the lower end of the detached edge of the breast portion diagonally upward to the rear of the breast portion, the said overlay forming pockets to receive stays on the said diagonal line, the stiffening of the swell portion of the breast and that portion of the breast section below detached, substantially as described.

No. 32,023. Method and Apparatus for Transferring Liquids from a lower to a higher level. (*Mode et appareil de transvasement des liquides d'un niveau bas à un niveau élevé.*)

Henry M. Close, Beaver Falls, Penn., U.S., 6th August, 1889; 5 years.

Claim.—1st. In the elevation of liquids from a lower to a higher level, the application of hydrostatic pressure to a mechanical device overcoming thereby the resistance offered to the movement of the pump piston. 2nd. That step hereinbefore described in the method of raising or transferring liquids from a lower to a higher level, which consists in applying the weight of the column of liquid above and on one side of the piston to overcome the resistance offered by the same column above and on the other side of the piston or neutral cylinder. 3rd. The method of raising or transferring liquids from a lower to a higher level, which consists in providing two columns of liquid, one at each end of the pump cylinder, adding liquid to each column alternately, and causing each of said columns to alternately neutralize the weight of the other in the reciprocating movement of an intermediate piston or neutral cylinder. 4th. In a device for transferring liquids from a lower to a higher level, a double chambered cylinder having outlet pipes in the outer ends, and an inlet pipe at the inner end of each of said chambers, and a hollow piston or neutral cylinder, of smaller diameter except at the ends working within said cylinder, said piston being provided with automatically operated valves to close the ends of the piston, as set forth,

whereby the column of liquid being raised is caused to rest against the heads or valves of the piston at each alternate stroke of the same, and balance the piston or neutral cylinder at any point within the double chambered cylinder. 5th. In a device for transferring liquids from a lower to a higher level, a main exit pipe divided at its lower end into two branches, each communicating with the outer ends of a double chambered cylinder, in combination with a piston or neutral cylinder, having automatically-operated valves at each end thereof, whereby the columns, each of which rests against one or the other of the heads of the neutral cylinder or piston alternately, as set forth. 6th. In a device for transferring liquids from a lower to a higher level, a double chambered cylinder, the piston or neutral cylinder B, with heads which work snugly within the cylinder, and with the main body reduced, a partition through which the reduced portion of the piston works, forming with the heads a space between the outer walls of the piston, and the inner walls of the chambered cylinder, supply pipes communicating with the space in each chamber and the check valves, and automatically operated valves in the ends of said piston, as set forth, whereby a vacuum chamber is formed for the inflow of water in one or the other chambers at each stroke of the piston, as set forth. 7th. In a device for raising or transferring liquids from a lower to a higher level, a divided cylinder having an opening through its partition, a double hollow piston having a reduced portion connecting the heads, fitting the opening in the partition to reciprocate therein, and with the heads fitting the cylinder to form chambers between the partition and heads and the valves, ducts or ports forming communicating passages between the chambers and the hollow piston, substantially as set forth. 8th. In a device for raising liquids, a double chambered cylinder, the inlet and outlet pipes communicating with each chamber, a double hollow piston or neutral cylinder working therein, and the valve ports in the ends of the piston acting to automatically and alternately open and close, to admit and discharge the liquids around the piston or neutral cylinder, substantially as set forth. 9th. In a device for raising liquids, a divided cylinder having an opening through its partition, a double hollow piston having a reduced portion connecting the head, fitting the openings in the partition to reciprocate therein, the heads fitting the cylinder, and forming chambers between the partition and heads, the ends of said piston made hollow, the inner and outer walls of both being provided with valved openings forming communications between the chambers and hollow piston, and the hollow piston and outlet, and acting automatically and alternately to admit and discharge the water from the inlet to the outlet, substantially as set forth. 10th. In a device for raising liquids, a double chambered cylinder A, a double hollow piston or neutral cylinder B, having the chamber O O', one at each end, and the inlet and outlet pipes, in combination with valves E, E', and the rods G for opening the valves automatically in the reciprocation of the piston or neutral cylinder, and the valves D and D', substantially as set forth. 11th. In a device for transferring liquids from a lower to a higher level, a double chambered cylinder having inlet and outlet ports in each chamber, a hollow neutral cylinder or piston of smaller diameter except the heads, which fit the main or double chambered cylinder, and valves located in the heads of the piston to open and close the ports, said valves being provided with a central opening, so as to leave the neutral cylinder open, whereby the columns of water will rest against each other within the piston or neutral cylinder to balance the same at any point within the main or double chambered cylinder, as set forth. 12th. In a device for transferring liquids from a lower to a higher level, a double chambered cylinder, having outlet pipes at each outer end, and inlet pipes at each inner end of said chamber, a neutral cylinder or piston of smaller diameter except the ends thereof, working within said cylinder, the ends of the piston being open, and provided with valves which open and close alternately at each stroke of the neutral cylinder or piston to admit or shut off the water supply from the space around the piston to the double chambers of the cylinder, as set forth.

No. 32,024. Grain Scourer. (*Nettoyeur des grains.*)

George White, London, Ont., 6th August, 1889; 5 years.

Claim.—1st. The casing D having an inlet and outlet for the grain, and divided into two compartments d_1 and d_2 by a perforated disk or diaphragm F, the partition K and shaft B, in combination with the radial arms G₁, G₂, and screen R, substantially as and for the purpose set forth. 2nd. In combination with the above, the radial arms G₁ formed with the recesses g , and the pins d_3 , substantially as and for the purpose set forth.

No. 32,025. Weighing and Price Scales.

(*Balance de pesage et de prix.*)

Julius E. Pitrat, Gallipolis, Ohio, U.S., 6th August, 1889; 5 years.

Claim.—1st. The combination, with the platform levers and the price beam, of the head block, and the connecting rod interposed between, and connecting the platform levers, directly with the head block of the price beam, substantially as and for the purpose described. 2nd. The combination, with the platform levers, the price beam, the head block carried by the price beam, and the rod directly connecting the platform levers with the head block of the head block retaining lever, and mechanism for simultaneously operating the lever and moving the price beam. 3rd. The combination, with the platform levers, the price beam, the head block, and the rod pivotally connected at its upper end with the head block, and at its lower end with the said platform levers, of the head block retaining lever, the U-shaped engager carried by the upper end of the lever mechanism, substantially as set forth, for simultaneously operating the price beam, and adjusting the lever. 4th. The combination, with the price beam, and the head block having a vertical slot, of the retaining lever and engager carried thereby, and adapted to enter the slot, substantially as and for the purpose described. 5th. The combination, with the price beam, and the head block having a transverse opening, and a vertical slot, of the rod e having a knife edged hook fitted in the transverse opening, and the retaining lever provided with an engager adapted to enter the vertical slot, substantially as

and for the purpose described. 6th. The combination of the price beam, the head block mounted on the said beam, the spring interposed between the end of the head block and the edge of the beam, the rod e pivotally connected with the head block, and the retaining lever provided with the engager, substantially as described for the purpose specified. 7th. The combination, with the sub-base, the price beam mounted on a base, and the head block, of the retaining lever having lateral projections between its ends, the uprights and the pivotal supports, substantially as and for the purpose described. 8th. The combination, with the sub-base, of the price beam mounted on a base, and the head block, of the retaining lever pivotally supported between its ends on the sub-base, the engager carried by the upper end of the retaining lever, and the spring connecting the lower end of the retaining lever with the sub-base, substantially as set forth. 9th. The combination, with the sub-base, the retaining lever, and the price beam, and the base having a rack on its under side, of the shaft journalled in bearings in the sub-base, and free to have a longitudinal motion in said bearings, and having its inner bearings against the lower end of the retaining lever, and the pinion keyed to the shaft and always in mesh with the rack, substantially as set forth. 10th. The combination, with the platform levers, the price beam, the base carrying the price beam, and the head block provided with the index or pointer, of the rod connecting the head block and the said platform levers, and the retaining lever, substantially as and for the purpose described. 11th. The combination, with the platform having multiplying levers, the price beam, and the rod connecting the platform levers with the price beam, of the weight counterbalancing lever located in the said platform, and connected with the said rod, substantially as and for the purpose described. 12th. The combination, with the price beam having its left branch slotted, of the head block having the rod e pivotally connected therewith, and mounted in said slot, whereby the pivotal supports of the beam and rod e may be brought into alignment, as and for the purpose described. 13th. The combination, with the price beam, and the platform levers, of the platform provided with a scoop-receiving opening, of the lid or compensating weight for closing said opening, substantially as set forth. 14th. The combination, of the main supplemental beams connected together, the one beam having two rows of graduations extended from left to right, the one set of graduations indicating the value, and the other set of graduations indicating pounds or units of weight, and the other beam graduated from the centre toward each end representing the rate per unit, and the tare of the bob-weight placed on the beam graduated from left to right, the tare weight placed on the right branch, and the head block mounted on the left branch of the other beam, substantially as and for the purpose described. 15th. The combination, with the sub-base and the two uprights, of the price beam composed of a main and supplemental beam in the same vertical plane, and the arch or bow-shaped pivotal support, the main beam having two rows of graduations extending from left to right, and a third row of graduations extending from the centre toward the end, and the supplemental beam having a row of graduations corresponding with the third row on the main beam, and extending from the centre toward the opposite end of the beam.

No. 32,026. Application of Electricity to Vehicles on Tram and Railways, and Apparatus for Effecting the same. (*Application de l'électricité aux voitures des tramways et des chemins de fer et appareil pour cet objet.*)

Frank Wynne, Westminster, Eng., 6th August, 1889; 5 years.

Claim.—1st. In apparatus for the application of electricity to propel vehicles, the combination, with a pipe or covered channel, of stationary insulated contact studs or rivets having parts 7 exposed in the road along which vehicles are to be electrically propelled, and parts exposed in said channel, said contact studs or rivets being so arranged that said exposed parts 7 are short and frequent in the direction of said road, but not in close proximity to each other, substantially as herein described for the purpose set forth. 2nd. In apparatus for the application of electricity to propel vehicles, the combination of a covered channel, stationary insulated contact studs or rivets having parts exposed in said channel, and contact parts 7 exposed in the road along which vehicles are to be propelled, and metallic connections between said contact studs or rivets, and said contact part 7, said exposed parts 7 being made short and frequent in the direction of said road, but not in close proximity to each other, substantially as herein described for the purpose set forth. 3rd. In apparatus for the application of electricity to propel vehicles, the combination of a covered channel, stationary insulated contact studs or rivets arranged at frequent intervals apart, and having part exposed in said channel, metallic contact bars or plates 7 exposed in and arranged transversely to the road, along which vehicles are to be propelled, said exposed bars or plates 7 being made short and frequent in the direction of said road, but not in close proximity to each other and metallic connections between said contact studs or rivets and said contact bars or plates 7, substantially as herein described for the purposes set forth. 4th. Apparatus for the application of electricity to propel vehicles, comprising pipe or channel 3, insulated contact studs or rivets 5, 5, with contact surfaces 8 and 7 exposed respectively in the pipe or channel, and in the road on which vehicles are to be propelled, and insulated conductors 9, or conductors 9 and 9a, substantially as herein described for the purposes specified. 5th. Apparatus for the application of electricity to propel vehicles, comprising pipe or channel 3, insulated contact studs or rivets 5, with parts 8 exposed in said pipe or channel, road contact 7 exposed in the road on which vehicles are to be electrically propelled, metallic connections between said contact studs or rivets 5 and said road contact 7 and conductor 9 (or conductors 9 and 9a), substantially as herein described for the purpose set forth. 6th. In apparatus for the application of electricity to propel vehicles, the combination of length of pipe or channel 3, and means, such as strap clips 20, 20 for connecting said lengths of pipe together, so that any single length of said pipe or channel can be removed without disturbing its neighbours, substantially as described.

No. 32,027. Electric Motor. (Moteur électrique.)

Leonidas G. Woolley, Grand Rapids, Mich., U.S., 6th August, 1889; 5 years.

Claim.—1st. In an electric motor, the field magnet, having its core constructed wider than the pole-pieces, whereby the centers of the armature and said core may be brought closer together, and the distance through which the magnetic force must travel thus reduced, while the proper quantity of metal in said core is maintained, substantially as set forth. 2nd. An electric motor or dynamo, in which the core of the field magnet is wider than the pole-pieces, and in which that portion leading from said core to said pole-pieces tapers gradually, whereby the lines of magnetic force are concentrated, instead of being broken or dispersed, substantially as set forth. 3rd. The combination, in a motor or dynamo, of a single cap, composed of diamagnetic metal and bearing supports for the armature shaft secured to the ends of said cap, substantially as shown and described. 4th. In a motor or dynamo, a single cap, constructed cup-shaped, as described, in combination with the bearing supports secured thereto, substantially as set forth. 5th. In a motor or dynamo, the combination, with the armature and its shaft, of a bearing-support having extended wings, which also support the brush-holders, substantially as set forth. 6th. An electric motor or dynamo, in which the core of the field magnet and the pole-pieces are cast in a single piece, said core being wider than said pole-pieces, and arranged to include the neutral part of the machine.

No. 32,028. Fly Catcher and Exterminator.

(Gobe-mouche destructeur.)

Thomas Pottle, Brantford, Ont., 6th August, 1889; 5 years.

Claim.—1st. The combination in a fly-catcher and exterminator, of the reservoir B and hollow tube C. In the reservoir B, a liquid E for drowning the flies, substantially as shown and for the purpose specified. 2nd. The combination in a fly catcher, having a reservoir B, the base or stand D composed of wire cloth or perforated zinc, substantially as and for the purpose described.

No. 32,029. Machinery for the Manufacture of Bottles. (Machinerie pour la fabrication des bouteilles.)

Dan Rylands, Barnsley, Eng., 6th August, 1889; 5 years.

Claim.—1st. The combination, with a bottle mould *k*, of a tube 15 and a roller or runner 16, and an inclined plane *q* for propelling or forcing it into the inside of the said mould *k* through the bottom thereof, and permitting it to fall therefrom, substantially as and for the purpose set forth. 2nd. The combination, with the tube 15 of the taper pin *t*, substantially as and for the purpose hereinbefore specified. 3rd. The combination, with the tube 15 and pin *t*, of the inclined grooved pathway *q* and roller or runner 16, the tubular guide *c*, the sliding ram *d*, the lever *e*, the link *g* and the balance weight *h*, substantially as described. 4th. The mechanism for removing the first top portion 13 and second top portion 12, of the bottle mould 11, consisting of the cams *s*, plungers *t*, guides *u*, spiral springs *v*, connecting links 9 and plungers *w*, substantially as described. 5th. The improved machine, constructed substantially as described, for the manufacture of bottles.

No. 32,030. Charging Scoops for Gas Retorts with Hand Lifting Machines. (Chargement des cornues à gaz au moyen de pelles montées par des machines à bras.)

August Runge, Stolberg, Germany, 6th August, 1889; 5 years.

Claim.—1st. In scoops for charging gas retorts, the combination of the scoop *m* having the loose bottom plate *d*, with its projections *f* and *z*, and sliding in the frame *R* by means of the chain wheels *V* and *W*, and chain *x* attached to the scoop, as *y*, in the manner and for the purpose substantially as described. 2nd. In scoops for charging gas retorts, the combination of the scoop *M* with its bottom plate *d*, and the frame *R* vertically movable on rails *s, s*, and having guide rollers *r, r*, chain rollers *p, p*, *q, q* and chains *p, q*, and bevel wheels *o, o*, connecting it with chain wheels *u, u* and chain *u, u*, and hand wheel *H*, in the manner and for the purpose substantially as described. 3rd. In scoops for charging retorts, the combination of the scoop *M*, loose bottom *d*, frame *R*, vertically movable on rails *s, s*, and with the trolley frame *A*, rollers *i, i*, circular rail *k*, roller *l*, chain wheels *c* and *c* and chain *c, c*, crank *b*, in the manner and for the purpose substantially as described.

No. 32,031. Cement. (Chaux hydraulique.)

Uriah Cummings, New Haven, Conn., U. S., 6th August, 1889; 5 years.

Claim.—As a new article of manufacture, a hydraulic cement containing principally a single silicate of magnesia, calcined and pulverized, substantially as set forth.

No. 32,032. Type Writing Machine.

(Graphotype.)

Frederick D. Taylor and Joseph A. White, Hartford, Conn., U.S., 6th August, 1889; 5 years.

Claim.—1st. In a type writing machine, the combination, with a wheel carrying the type, provided with a gear wheel engaging with a gear wheel or segment of a gear wheel, having an operating arm connected thereto, and arranged to move back and forth over an index of letters or characters, for the purpose specified. 2nd. In a

type writing machine, the combination, with a wheel carrying the type, provided with a gear wheel engaging with a gear wheel or segment of a gear wheel, having an operating arm connected thereto, an arm for operation on the type of the type wheel, a guide-way, and means for operating said arm, for the purpose specified. 3rd. In a type writing machine, the combination, with a wheel carrying the type provided with a gear wheel engaging with a gear wheel or segment of a gear wheel, having an operating arm connected thereto, a pivoted arm for operation on the type of the type wheel, a guide-way for said arm, and said arm adapted to be operated by a lever, for the purpose specified. 4th. In a type writing machine, the combination, with a wheel carrying the type, provided with a gear wheel engaging with a gear wheel or segment of a gear wheel, having an operating arm connected thereto, a pivoted arm for operation on the type of the type wheel, a guide way for said arm, and said arm having an operating arm N, having an inclined edge for operation thereof by a lever, for the purpose specified. 5th. In a type writing machine, the combination, with a wheel carrying the type provided with means for operating the same, a pivoted arm L for operation on the type of the type wheel, a guide way for said arm, and levers A and M for operation on said arm, for the purpose specified. 6th. In a type writing machine, the combination, with a wheel carrying the type provided with means for operating the same, a pivoted arm L for operation on the type of the type wheel, a guide-way for said arm, and levers A and M connected to mechanism to operate the carriage carrying the paper sheet feed roll, etc., for the purpose specified. 7th. In a type writing machine, the combination, with a wheel carrying the type, provided with means for operating the same, a pivoted arm L for operation on the type of the type wheel, a guide-way for said arm, levers A and M, and connected by a swinging arm Z to a pivoted pawl Y, adapted to engage with the ratchet teeth *t* of the carriage carrying the paper sheet, for the purpose specified. 8th. In a type writing machine, a type wheel composed of a disk or plate having radial spring fingers K, each one having on its face projecting laterally therefrom a letter or character, for the purpose specified. 9th. In a type writing machine, a type wheel composed of a plate or disk H, having radial spring fingers K, each one having on its face and projecting laterally therefrom a letter or character, a plate or disk J secured to said plate H, provided with radial openings or slots *g*, the slots being in line opposite to or back of said spring fingers, for the purpose specified. 10th. In a type writing machine, a type wheel composed of a plate or disk H, having radial spring fingers K, each having on its face and projecting laterally therefrom a letter or character, a plate or disk J secured to said plate H, provided with radial openings or slots *g*, each having bevelled edges or sides, the slots being in line opposite to or back of said fingers, for the purpose specified. 11th. In a type writing machine, a type wheel composed of a plate or disk H, having radial spring fingers K, each one having on its face and projecting laterally therefrom a letter or character, a plate or disk J secured to the plate H, provided with radial openings or slots *g*, the slots being in line opposite to or back of said spring fingers, in combination with an arm L arranged to pass through each of said slots and strike a spring finger, for the purpose specified. 12th. In a type writing machine, a carriage for carrying the paper and feed roll, provided with a longitudinal groove on its bottom face, and a longitudinal groove on each side, in combination with friction rollers properly arranged on the supporting frame for said grooves to run over said rollers, for the purpose specified. 13th. In a type writing machine, a carriage carrying the paper feed roll, a rail or bar for a rest for the paper when being printed, said carriage being arranged to travel in suitable guide-ways upon a support, and said support having a stop or abutment M in position for a stop or abutment L on the carriage in its travel to abut or strike against it, for the purpose specified. 14th. In a type writing machine, an index of letters or characters arranged in the form of an arc of a circle representing on one side of the centre small letters and on the other side capitals. 15th. In a type writing machine, the combination, with a carriage carrying the paper feed roll, and a bar or rail for a rest for the paper when being printed of a bell F₁, having a spring hammer G₁, its arm provided with an inclined edge *u*, and located in position for a pin or projection on the carriage, as the carriage moves along its guideway to bear upon said inclined edge, pressing said arm down and past the same for the sounding of the bell by said spring hammer. 16th. In a type writing machine, the combination, with a carriage carrying the paper feed roll and a bar or rail for a rest for the paper when being printed, a bell F₁ having a spring hammer provided with a notch *z* in its hammer arm, and located in position for a pin or projection *w* on the carriage having a notch *y* to bear upon said hammer arm notch in the travel of the carriage, and press said hammer one side for the purpose specified. 17th. In a type writing machine, in combination with a carriage for carrying the paper, its feed roll and a bar or rail for a rest for the paper when being printed, provided with ratchet teeth and arranged to travel in suitable guide-ways on a suitable support, of a pawl suitably connected to an operating lever and arranged to engage with said ratchet teeth, and an inclined bearing surface Q₁ on the support for the opposite end of said pawl to engage therewith, for the purpose specified. 18th. In a type writing machine, a carriage carrying the paper feed roll, a bar or rail for a rest for the paper being printed, and a swinging bar T to guide the paper. 19th. In a type writing machine, a carriage carrying the paper feed roll, a bar or rail for a rest for the paper being printed, and a bar or rail T secured thereto and provided with a scale or graduation for the purpose specified. 20th. In a type writing machine, the combination, with the carriage carrying the paper feed roll, and a bar having ratchet teeth *t* for engagement therewith, of a pawl Y to move said carriage, of means adapted to hold said pawl in engagement with a ratchet tooth, when acted upon by the operating lever. 21st. In a type writing machine, the combination with the carriage carrying the paper feed roll, and a bar or rail having ratchet teeth for engagement therewith, of a pawl to move said carriage, of a stop or abutment having an inclined face Y₁ secured to the frame or support in position for the pawl, when engaged with a ratchet tooth to bear against and be locked with said ratchet tooth, when operated upon by the operating lever. 22nd. In a type writing machine, a carriage carrying the paper feed roll, a rail or bar for a rest for the paper when being printed, said carriage being arranged to travel in suitable guide-ways upon a support, and

provided with a series of holes or openings *p* for a stop or abutment to be inserted therein, as desired, and said support having a stop or abutment *M* in position for said stop or abutment on the carriage in its travel to abut or strike against it, for the purpose specified.

No. 32,033. Cigar Cutter. (*Coupe-cigare.*)

Joseph B. Moos, Chicago, Ill., U.S., 6th August, 1889; 5 years.

Claim.—1st. In a cigar cutter, the combination of a box provided with holes at its top, a knife or blade movable forward and backward across the holes, guides or ways in which the knife or blade moves, and by which it is held close to the underside of the holes, and levers for advancing, and a spring for retracting the knife or blade, substantially as described. 2nd. In a cigar cutter, the combination of a box provided with holes in its top, a knife or blade movable forward and backward across the holes, guides or ways in which the knife or blade moves and by which it is held close to the underside of the holes, and levers for advancing, and a spring for retracting the knife or blade, the body of the box being hinged to the base at one end, and secured by a clasp at the other, whereby, by pressing the clasp, the body or base may be swung on its hinge to open the box for the removal of cigar ends, substantially as described. 3rd. In a cigar cutter, the combination of a box provided with holes in its top, a knife or blade movable forward and backward across the holes, guides or ways in which it is held close to the underside of the holes, levers for advancing, and a spring for retracting the knife or blade, and a handle connecting with the levers in position to be depressed by the hand, or wrist of the hand, holding the cigar in one of the holes, whereby the levers are operated, and the knife or blade advanced, substantially as described. 4th. In a cigar cutter, the combination of a box provided with holes in its top, a knife or blade movable forward and backward across the holes, and provided with lugs on its underside, guides or ways in which the knife moves and by which it is held close to the underside of the holes, levers connected with the lugs on the underside of the knife or blade for advancing, and a spring for retracting the knife or blade, and a handle connecting with the levers in position to be depressed by the hand, or wrist of the hand, holding the cigar in one of the holes, whereby the levers are operated and the knife or blade advanced, substantially as described.

No. 32,034. Bucket Elevator for Flouring Mills. (*Élévateur à golets pour les moulins à farine.*)

William J. Purdy, John P. Anderson and Robert H. D. S. Montague, Carberry, Man., 6th August, 1889; 5 years.

Claim.—1st. The brush *D* secured to the belt *A*, having cups *B*, in combination with an elevator tube *C*, as and for the purpose set forth. 2nd. The brush *D* comprising a rectangular metallic frame *E*, and cover plate *G*, the intervening flexible plates *H*, *H* projecting from the frame and cover on three sides, the brushing *I* intervening said plates *H*, *H*, and the rivets or bolts *3* to compress the several parts flatwise together, as set forth. 3rd. The combination, with the elevator trunk or tube *C*, and endless belt *B*, having buckets or cups *B*, of a brush *D* provided with a central aperture *J*, and secured to the belt to sweep three sides of the trunk or tube, as set forth.

No. 34,035. Button Hole Attachment for Sewing Machines. (*Appareil à boutonnières pour machines à coudre.*)

Samuel Halliwell, (assignee of Albert W. Johnson), New Haven, Conn., U.S., 6th August, 1889; 5 years.

Claim.—1st. In a button-hole attachment for sewing-machines, the combination of a work-holder, a lever adapted to engage the needle bar of the sewing-machine and receive vibratory movement therefrom, a disk, and mechanism between it and said lever, whereby said disk receives intermittent rotation, with mechanism, substantially such as described, between said disk and work-holder, whereby said work-holder receives an intermittent advance and vibratory movement, the said work-holder hung upon a pivot as its centre of vibration, the said pivot made transversely movable, and a cam in connection with said disk, and so as to partake of its rotation, the said cam in engagement with said pivot, the active portion of the cam corresponding in position to the eyelet end of the button-hole, and the said active portion of the cam of S-shape, substantially as specified, and whereby, under the rotation of said disk, a transverse movement is imparted to said pivot, and through it to the work-holder carried by said pivot, first to one side of the central line, then returning it across to the opposite side, and finally returning it upon that side to the centre. 2nd. In a button-hole attachment for sewing-machines, the combination of a work-holder adapted to receive an intermittent advance and vibratory movement, a pivot forming the centre of vibration for said work holder, a lever adapted to engage the needle bar of the sewing-machine and receive vibration therefrom, and a disk, with mechanism, substantially such as described, between it and said lever, whereby intermittent rotation is imparted to said disk, said disk constructed with a circumferential groove having an S-shaped bend therein, a lever between said disk and work-holder, the said lever carrying the said pivot upon which the said work-holder is hung as a centre of vibration, the said lever provided with an extension therefrom adapted to work in the groove of the said disk, substantially as and for the purpose described. 3rd. In a button-hole attachment for sewing-machines, the combination therewith of a work plate *23*, constructed with a needle-hole *24*, and provided with vertical guides adapted to prevent the rotation of the plate, with one or more springs below said work-plate and upon which it rests, substantially as and for the purpose described, and whereby the said plate is made universally adjustable as to the plane of its working surface.

No. 32,036. Apparatus for Removing Sand and like Bars or Banks in Rivers and Tideways and for Deepening the same. (*Appareil pour enlever les bancs de sable et autres dans les rivières et courants et les creuser.*)

John M. B. Baker, Pimlico, Eng., 8th August, 1889; 5 years.

Claim.—1st. In apparatus for removing sand and like bars or banks in rivers and tideways and for deepening the same, the nozzle *b*, in combination with the telescopic tubes *a*, and universal swivel joint, all substantially as and for the purposes set forth. 2nd. In apparatus for removing sand and like bars or banks in rivers and tideways, and for deepening the same, the use of telescopic tubes mounted on an universal joint, and adapted to traverse from side to side of the raft *f*, substantially as and for the purposes set forth. 3rd. In removing sand and like bars or banks in rivers and tideways, and for deepening the same, the apparatus consisting of tubes *a*, nozzle *b*, hose *c*, pump *d*, boiler *e*, raft *f*, suction pipe *g*, all arranged and operated substantially as set forth.

No. 32,037. Machinery for Drawing Wire. (*Machine à tréfiler.*)

Alfred S. Bolton and Thomas Bolton, Oakamoor Mills, near Cheadle, Eng., 8th August, 1889; 5 years.

Claim.—The construction of wire-drawing mechanism above described, wherein the dies arranged for a succession of drawings are carried by a rock frame in a lubricating trough, and are thus enabled to act upon the wire while the same is immersed in a lubricating bath, for the purposes set forth.

No. 32,038. Casing of Certain Printing Type and Device for use therewith. (*Casse de caractères d'imprimerie et appareil pour cet usage.*)

Albert Stobzenwald, Berlin, Germany, 8th August, 1889; 15 years.

Claim.—1st. In a case for printing type, the combination, with a case or supporting frame, of the parallel laths or sticks *a*, with the partitions *c*, constructed substantially as above described. 2nd. As a novel and useful article of commerce for the purpose set forth, the plate *e*, with prongs *s*, constructed substantially as herein set forth.

No. 32,039. Car Coupling. (*Attelage de chars.*)

William P. Turner, Connell, N.B., 8th August, 1889; 5 years.

Claim.—1st. The novelty of the plunger *b* with its spiral spring *c*, steel roller *d*, and connecting chain *r* with all dependent connections, construction and relative position to other parts of the coupling. 2nd. The link guide consisting of parts indicated by the letters *a*, *a*, *t*, *j*, *i*, *k*, *w* and *e*, and connecting chain *r*, and its construction and dependent connections. 3rd. The ratchet shaft or pin lift *g*, with dependent connections, all substantially and as hereinbefore set forth.

No. 32,040. Gas and Petroleum Motor Engine. (*Machine motrice à gaz et à pétrole.*)

Gottlieb Daimler, Caunstatt, Germany, 8th August, 1889; 5 years.

Claim.—1st. In a gas or petroleum motor engine working with a cycle of four strokes, the combination of two working cylinders having their pistons connected by rods to one and the same crank, with a closed casing containing the crank-shaft, with which casing the forward end of both cylinders communicate, and which serves as a reservoir of air or gaseous mixture, drawn into the same by the simultaneous backward motion of the pistons, and compressed therein by their simultaneous forward motion, substantially as and for the purposes set forth. 2nd. In a gas or petroleum motor engine working with a cycle of four strokes, the combination of two working cylinders, having their pistons connected by rods to one and the same crank, a closed casing containing the crank and fly wheel, and a cam groove formed in the fly wheel, having a double loop containing two slides, each of which operates the discharge valve of one of the cylinders, substantially as and for the purposes described. 3rd. In a gas or petroleum motor engine working with a cycle of four strokes, the combination of a revolving cam groove, with double loop, a slide situated in the said cam groove and actuating a rod, with hinge-jointed end that effects the opening of the discharge valve of the cylinder, a lever whose one end has a head that can be brought into the path of an arm on the hinge-jointed part of the rod so as to deflect it, and a sleeve gearing with the other end of said lever, and operated by a governor so as to move the said lever into the said position when the normal speed of the engine is exceeded, substantially as and for the purposes described.

No. 32,041. Mathematical Puzzle. (*Jeu de patience mathématique.*)

George E. Briggs, Pittsburgh, Penn., U.S., 8th August, 1889; 5 years.

Claim.—A mathematical puzzle consisting of nine blocks numbered 1, 2, 3, 4, 5, 6, 7, 8 and 9, these to be arranged within a box, so that after removing one of said blocks, the remaining eight are to be so moved into columns that each one, that is, each perpendicular, each horizontal, each diagonal column or row, will form, when the figures thereon are added (including the block replaced) the sum of fifteen, substantially as described and shown.

No. 32,042. Secret Nail Driver and Set.*(Machine à ficher les clous cachés.)*

William C. Burtch and Elbert M. Gurnee, Kansas, Mo., U.S., 8th August, 1889; 5 years.

Claim.—1st. In a nail driving and setting implement, the combination of the main tube slotted at one side to receive the nail, the driver bar carried within said tube, and the spring cutting blades mounted in the lower end of the tube on each side of the driver bar, substantially as and for the purpose set forth. 2nd. The combination, with the main tube provided with a slot to receive the nails, of the shouldered nut secured in its lower end, and carrying the spring blades, the knob *b* carrying projection 10, and the driver bar *B* working in the main tube, and provided with the lug *e* adapted to engage with projection 10, substantially as shown and described. 3rd. In a nail driving and setting implement, the combination, with a main tube carrying a driver bar within the same, and having in its lower end the spring blades *E*, of a magazine secured upon said main tube, and adapted to revolve around the same, substantially as shown and described. 4th. The combination, with the main tube provided with a slot to receive the nails, and carrying the blades *E* at its lower end, of a driver bar working in said tube any between the knives, a cylinder secured upon the main tube and slotted as shown, and the jacket *C*, surrounding the cylinder, substantially as shown and described. 5th. In a nail driving and setting implement, the combination, with the main tube having different sized bores and slotted to receive the nails, of a driver bar working in said tube, and shaped to correspond with said tube, the knob *b*, secured to the main tube and carrying projection 10, the lug *e* formed on driver bar *B*, and sliding in the main tube, the ratchet ring *i* cast upon or otherwise affixed to the main tube, and adapted to engage with the spring pawl *F*, the cylinder *D* and jacket *C*, all arranged and adapted to operate substantially as shown and described. 6th. In a nail driving and setting implement, the combination, with the main tube slotted to receive the nail, of the driver bar *B* working in said tube, the cylinder *D* secured to the main tube, and turning on the same, the slotted jacket *C* surrounding the cylinder *D*, the shouldered nut *I* slotted to receive the blades *E*, the nut *p* working on nut *I*, the ratchet ring *i* located on the main tube, and the spring pawl *F* adapted to engage with the teeth of said ratchet ring, substantially as shown and described. 7th. A nail driving and setting implement, having a slitting device, comprising a pair of blades at its delivery end, said blades being disposed upon each side of the driver bar of the implement, whereby, a slot in the material for the reception of the nail to be driven and set may be opened, substantially as described. 8th. A nail driving and setting implement having the oppositely located slitting blades projecting from its delivery end, whereby a slot may be opened in the material for the reception of the nail to be driven and set, substantially as described.

No. 32,043. Lemon Juice Extractor.*(Pressoir à citron.)*

John L. Easley, New York, N.Y., U.S., 8th August, 1889; 5 years.

Claim.—1st. In a lemon-juice extractor, a clamp for holding a piece of lemon, consisting of a rotary frame, having vertical curved arms or ribs between which a lemon may be wedged, with openings between the arms by means of which the lemon-skin may be dislodged from the frame, substantially as shown and described. 2nd. In a lemon-juice extractor, a clamp for holding a piece of lemon, consisting of a rotary frame formed with inverted cup 27, with interior vertical ribs 28 having points 26, and openings 29 between the ribs 28, substantially as shown and described. 3rd. In a lemon-juice extractor, a pulp-disintegrator, and juice-extractor, consisting of an oval-shaped vertical projection having a solid surface with faucets, and a laterally extending base portion, with slots beneath the grooves formed by the faucets, and a supporting flange, substantially as described. 4th. A lemon-juice extractor, consisting of a standard having a bracket, a detachable frame mounted on the bracket and formed with a vertical projection, having an abrading surface consisting of faucets, and a laterally extending base portion with vertical slots, and a supporting-flange exterior thereto, and a rotary vertically-movable clamp located above the bracket, with mechanism in the standard for operating the same, substantially as described. 5th. In a lemon-juice extractor, a rotary vertically-movable clamp for holding a piece of lemon, provided with an operating screw-rod, having a smooth portion, and cushioning-spring, thereby permitting the screw-rod to have a yielding vertical rotary movement when released from threaded engagement, substantially as described. 6th. In a lemon-juice extractor, a detachable frame 11 for disintegrating and retaining the pulp and seeds of a lemon, and permitting the juice to flow freely, consisting of the oval vertical central portion 12, having a surface formed with the diamond-shaped projections 18, and intersecting grooves 19, the concentric strips 13, with downwardly-tapering slots 15 adjacent to the base of vertical portion 12, and the supporting-flange 20, and handle 22, substantially as described. 7th. A lemon-juice extractor, consisting of standard 1, with ring 5, and arm 51, the detachable frame 11, with handle 22 supported on ring 5, and consisting of central vertical portion 12 with abrading-surface 17, and having grooves 19, and adjacent to its base concentric strips 13, and slots 15, and the wire lemon-holding frame 10, having vertical screw 8 mounted in standard 1, and handle 9, with cushioning spring 25, substantially as described.

No. 32,044. Brick Machine. (Machine à briques.)

Robert N. Ross, St. Louis, Mo., U.S., 8th August, 1889; 5 years.

Claim.—1st. In a brick-machine, the combination, with the plunger, of toggle-bars for operating it, a pitman connected to the toggle-bars, and a cam for imparting reciprocating motion to said pitman, said cam and the other parts being so disposed that the point of contact between the pitman and cam, approaches the centre of motion of the cam as the toggle-bars move into line, substantially as set forth. 2nd. In a brick-machine, the combination, with the plunger, and toggle-bars for operating it, of a pitman connected directly to said toggle-

bars, and having a lateral projection therefrom, and a wheel having a cam-groove in which said projection fits, the cam-groove, and the toggle-bars being so disposed that the projection will be moved toward the centre of motion of the wheel as the toggle-bars move into line and pressure increases, substantially as set forth. 3rd. In combination with the plunger of a brick or similar machine, the toggle-bars connecting the plunger to a fixed object, pitman connected to the toggle-bars, a projection on the pitman, and cam-wheel for operating the pitman, the bearing of the cam upon the projection of the pitman approaching the centre of the wheel as the plunger enters the mould, as set forth. 4th. In combination with the plunger, of a brick or similar machine, the toggle-bars connecting the plunger to a fixed object, pitman connected to the toggle-bars, projections on the pitman, and cam-wheels arranged side by side and bearing upon the projections on the opposite sides of the pitman, substantially as and for the purpose set forth. 5th. In combination with the upper and lower plungers of a brick-machine, toggle-bars connecting the plungers to the frame of the machine, pitman connected to the toggle-bars, projections on the pitman, twin upper and lower cam wheels provided with grooves to receive the projections, and which act to operate the pitman and toggle-bars, substantially as shown and described. 6th. In combination with the upper and lower plungers of a brick or similar machine, toggle-bar connecting the plungers to the frame of the machine, pitman connected to the toggle-bars, upper and lower twin cam wheels provided with grooves to receive the projections on the pitman, and which act to operate the pitman and toggle-bars, and straps connecting the pitman to the axles or journals between each upper and lower pair of wheels, substantially as shown and described for the purpose set forth. 7th. In combination with the plungers of a brick or similar machine, toggle-bars connecting the plungers to the frame of the machine, one of the toggle-bars being provided with a slot *B*, pitman connected to the toggle-bars, cam wheels for operating the pitman, adjustable levers pivoted to the frame of the machine and engaging beneath the lower plunger, and pins on the lower cam wheels for coming against the levers and lifting the lower plunger to eject the bricks from the mould, substantially as shown and described for the purpose set forth. 8th. In combination, with the plungers of a brick or similar machine, toggle-bars connecting the plungers to the frame of the machine, pitmen connected to the toggle-bars, upper and lower combined cog and cam wheels for operating the pitmen, and toggle-bars, combined cog and cam wheel meshing into one of the pitman wheels, charger and arm or lever connected to the charger, and operated by the charger cam wheel, substantially as and for the purpose set forth. 9th. The combination, with the plungers and means for operating them, of the pivoted lever *T* engaging at one end with the lower plunger, and engaged at the other by a moving part for rocking it on its fulcrum, and a vertically-adjustable block to which said lever is fulcrumed, substantially as set forth. 10th. In combination with the plunger of a brick or similar machine, toggle-bars connecting the plungers to the frame of the machine, one of the toggle-bars being provided with a slot *B*, mechanism for operating the toggle-bars, levers secured to a shaft made vertically adjustable by sliding-boxes and wedges, and engaging beneath the lower plunger, and mechanism for operating the levers to lift the plunger, and eject the bricks from the mould, substantially as set forth.

No. 32,045. Letter Box. (Boîte à lettre.)

Fannie T. Taylor, Mamaronock, N. Y., U. S., 8th August, 1889; 15 years.

Claim.—1st. The combination, substantially as hereinbefore set forth, of the letter-box divided into two compartments, and having an opening at the top for the reception of packages, etc., an opening at the side for the reception of letters, an opening at the bottom through which mail-matter from both compartments may be taken, a bottom-piece hinged to the lower end of the box, and closing the delivery-opening therein, and covers or lids for the openings in the top and side of the box. 2nd. The combination, substantially as hereinbefore set forth, of the outer casing, the inner casing hinged to the outer casing, the bottom-piece of the outer casing hinged to its lower end, said inner casing having an inclined top, and the outer casing being provided at the top, with an opening for the reception of parcels and at the side with an opening for the reception of letters. 3rd. The combination, substantially as hereinbefore set forth, of a letter-box having an opening in its top, a lid to cover said opening, and a series of hinged spring-actuated sharp-pointed guard-bars within the box around its opening. 4th. The combination, substantially as hereinbefore set forth, of the letter-box having an opening in its top, the sharp-pointed guard-bars arranged around said opening, the lugs to which the guard-bars are hinged, the pins projecting from the rear faces of the guard-bars, and the annular coiled spring embracing the guard-bars between the pins and normally holding the sharp-pointed lower ends of the guard-bars together.

No. 32,046. Steam Boiler. (Chaudière à vapeur.)

Theodore E. Button, Waterford, N.Y., U.S., 8th August, 1889; 5 years.

Claim.—1st. A boiler having vertical loops depending from the crown sheet, substantially as described. 2nd. The combination of a boiler shell and crown sheet, with a magazine consisting of pendant loops, substantially as described.

No. 32,047. Railroad Snow Plough.*(Charrue à neige de chemin de fer.)*

Charles A. McCarthy and John P. Moran, Sault de Ste. Marie, Mich., U.S., 8th August, 1889; 5 years.

Claim.—1st. In a railroad snow-plough, the combination, with the body, having a vertical wedge-shaped mould-board at its front end, of vertically-rotating snow-wheels on the two faces of said mould-board, and the smaller vertically-rotating snow-wheels in front of, and above the lower wheels, substantially as set forth. 2nd. In a railroad snow-plough, the combination, with a box-like body, and a

triangular mould-board secured to the forward end of the same, provided with concave sides, and a concave forward cutting-edge, of horizontal shafts journaled in the sides of the mould-board, a hub secured to the outer extremity of each shaft, twisted spaced arms radiating from said hubs, twisted blades detachably attached to the said arms, a boiler, and two engines located within the body, said engines being connected with the said boiler, and means, substantially as shown and described, for connecting the several engines with the several shafts, as and for the purpose specified. 3rd. In a railroad snow-plough, the combination, with a box-like body, and a triangular mould-board attached to the forward end of the same, provided with concave sides, and a concave cutting-edge of a snow-wheel, provided with twisted blades journaled in the sides of the mould-board at the centre, a shaft journaled transversely in the forward upper edge of the said mould-board, small snow-wheels also provided with twisted blades attached to the extremities of the said shaft, and means, substantially as shown and described, for independently rotating the side wheels, and the upper shaft carrying the small snow-wheels, as and for the purpose specified. 4th. In a railroad snow-plough, the combination, with a box-like body, containing a boiler and three independent engines, and a triangular mould-board secured to the forward end of the said body, provided with concave sides, and a concave forward cutting-edge of a longitudinal shaft, journaled at each side of the mould-board at the centre, a hub secured to the outer extremity of each of said shafts, twisted spaced arms projected from the hub, and twisted blades detachably attached to the said arms, a single transverse shaft journaled in the forward end of the mould-board near the top, provided at each extremity with an attached snow-wheel, provided with detachable twisted blades, and a connection, substantially as shown and described, between the several engines and the boiler, and the several shafts and the several engines, as and for the purpose specified.

No. 32,048. Purse. (*Porte-monnaie.*)

Louis Bisson, Montréal, Qué., 8th August, 1889; 5 years.

Résumé.—Les pièces A et Ar, leurs languères D et Dr, les cotés E et Er, les recouvrements F et Fr, et recouvrements d'illusion G et Gr, les points secrets H, et les coutures I et I', ainsi que les autres coutures de sommet et de base J et Jr, et de cotés K et Kr, et points centraux L et Ll, le tout tel que décrit et pour les fins indiquées.

No. 32,049. Vent for Revolving or Tumbling Churns. (*Trou de baratte tournante ou à bascule.*)

Joseph W. Smith, Stratford, Ont., 10th August, 1889; 5 years.

Claim.—In a tumbling or revolving churn, the combination, with a tubular trunnion T, of the vent tube or pipe P, substantially as and for the purpose set forth.

No. 32,050. Muffling Attachment for Violins. (*Etouffoir de violon.*)

Walter Thompson, Orange, N.J., U.S., 10th August, 1889; 5 years.

Claim.—1st. The combination, with the bridge and tail-piece of a violin, or other stringed instrument, of muffling plates arranged at opposite sides of the bridge, and a chin-lever fulcrumed to the tail-piece and connected to the muffling plates for applying the same to or removing them from the bridge, substantially as set forth. 2nd. The combination, with the bridge and tail-piece of a violin or other stringed instrument, of muffling plates arranged at opposite sides of the bridge, a chin-lever fulcrumed to the underside of the tail-piece, and connecting rods between the muffling plate and the chin-lever, substantially as set forth. 3rd. The combination in a violin or other stringed instrument, with the bridge and tail-piece of the same, of muffling plates at opposite sides of the bridge, a chin-lever fulcrumed to the tail-piece, and connecting rods applied to said muffling plates and pivoted at opposite sides of the fulcrum of the chin-lever, substantially as set forth. 4th. The combination, with the bridge and tail-piece of a violin or other stringed instrument, of muffling plates arranged at opposite sides of the bridge, a chin-lever fulcrumed to the tail-piece connecting rods between the muffling plates and the chin-lever, and means for locking the chin-lever to the tail-piece, when the muffling plates are applied to the bridge, substantially as set forth. 5th. The combination, with the bridge and tail-piece of a violin or other stringed instrument, of muffling plates arranged at opposite sides of the bridge, a chin-lever fulcrumed to the tail-piece connecting rods between the muffling plates and the chin-lever, and means for returning the lever and muffling plates into normal position, and on releasing the lever from the tail-piece, substantially as set forth. 6th. The combination, with the bridge and tail-piece of a violin or other stringed instrument, of muffling plates arranged at opposite sides of the bridge, a chin-lever fulcrumed to the tail-piece, connecting rods between the muffling plates and chin-lever, a spring for lifting the chin-lever, and a notch or recess at the underside of the tail-piece for engaging the chin-lever, substantially as set forth. 7th. The combination, with the bridge and tail-piece of a violin or other stringed instrument, of muffling plates arranged at opposite sides of the bridge, a chin-lever fulcrumed to the tail-piece, connecting rods between the muffling plates and chin-lever, a recess in the tail-piece for engaging the chin-lever, and a spring for lifting the chin-lever and a spring for returning the chin-lever into normal position, substantially as set forth.

No. 32,051. Gas Burner. (*Bec à gaz.*)

James Smith and Harry J. Boyd, London, Ont., 10th August, 1889; 5 years.

Claim.—1st. As an attachment to gas supply tips, a conical tube having a small expanding flange B formed on or attached to the small end of said conical tube, and a larger expanding flange D formed on or attached to the largest end of said conical tube, the whole enclos-

ing the gas supply tip, substantially as shown and specified and for the purpose set forth. 2nd. As an attachment to gas supply tips, a conical tube, the smallest end of which terminates in a small expanding flange B, the sides of which are corrugated and the largest end terminates in a larger expanding flange D, the sides of which are perforated and fitted with a movable perforated shell E for the purpose of closing or opening the perforations in the flange, substantially as shown and specified and for the purpose set forth. 3rd. In combination with a conical tube having a small expanding flange B at one end, and a larger expanding flange D at the other end, the gauze wire screen F, through which gauze wire screen the gas supply tip is admitted to the interior of the burner, substantially as shown and specified and for the purposes set forth.

No. 32,052. Fire Escape. (*Sauveteur d'incendie.*)

William Bruce, Wellsville, N.Y., U.S., 10th August, 1889; 5 years.

Claim.—1st. In a fire escape, the combination of the frame, having the head block grooved in its lower side, and forming the top of a rope brake, the brake shoe grooved in its upper side and attached to the rear arm of a double armed lever pivoted to and between the side bars of the main frame, the link rod pivoted at its upper end to the front arm of said lever, and the hooked bar pivoted to the lower end of the link-rod, sliding longitudinally in the frame and adapted to be attached to a proper support for a person's body, substantially as specified. 2nd. In a fire-escape, the combination of the longitudinal frame having the head block forming the upper part of a rope brake, the latch bar pivoted to the head block and notched on its edge near its lower end to engage a pin on the shorter side bar of the said frame, the double armed lever pivoted to and between the side bars of the frame, and operated by means, substantially as described, and the brake shoe connected to the rear arm of said lever, and forming the lower part of the rope brake, as specified. 3rd. In a fire escape, the combination, with the frame B having the perforated base plate, the side bars b_1, b_2 and the head block b_3 , provided with the rope groove b_4 , and the pivoted latch bar b_5 , of the bar C having the hook on its lower end for the attachment of a support with its journals sliding in the slots b_6 of the frame B, and provided with the slot c_1 straddling the bar c_2 of the frame B, the link rod D, the double-armed lever E pivoted in the frame B, and having the end of its front arm enlarged and provided with the notch e_1 , and adjustable brake shoe F provided with the rope groove f , and the screws f_1, f_2 , by means of which the brake shoe is adjusted and set on the rear arm of the said lever E, substantially as specified. 4th. In a fire-escape, the combination, with the upper longitudinal section, comprising the rope brake and the brake operating mechanism, of the lower detachable transverse section, comprising a support for a person's body, and a transverse hand-bar, substantially as specified. 5th. In a fire-escape, the combination, with the upper longitudinal section, comprising the rope brake, the brake operating lever and link, and the sliding bar C having the hook c on its lower end, of the lower transverse section, provided with the hand-bar having the septum to engage the hook c between its arms, and the strap engaged by snap-hooks at its end to openings in the ends of the hand-bar, substantially as specified. 6th. The herein described fire escape, composed of the upper longitudinal section comprising the frame, the rope brake, the link and lever and the bar C having the hook c on its lower end, the lower transverse section comprising the hand-bar g , the shank g_1 , the curved bar g_2 , projection g_3 and the septum g_4 , and the strap H provided at its ends with snap hooks h to engage openings in the ends of the hand bar, substantially as specified. 7th. In a fire escape, the combination of the upper longitudinal section, comprising the rope brake, the brake operating lever and link, and the sliding bar having a hook on its lower end, the turn-button Z, and the lower detachable transverse section provided with the hand-bar, having the septum adapted to engage the hook below the turn-button, and provided with a detachable strap, substantially as specified.

No. 32,053. Washing Machine.

(*Machine à blanchir*)

William Shedlock, London, Eng., 10th August, 1889; 5 years.

Claim.—1st. A washing machine, wherein one or more perforated washing chambers, or receptacles b , are arranged to rotate in a suitable box or case a , and are provided with one or more movable sides, substantially as and for the purpose above specified. 2nd. The combination, with the washing chamber or receptacle b , having the movable side or sides, of the arms or levers c arranged to be operated by one or more cam grooves f in the box or case a , substantially as set forth. 3rd. The combination, with the gudgeon e of the revolving receptacle b , of a leather, india-rubber, or other suitable washer i , and set screw j for ensuring tightness of the joint around the projecting extremity of the said gudgeon, substantially as described. 4th. A washing machine, wherein the washing chamber b is provided with one or more sides, having perforations b_2 , through which the water is alternately forced into and drawn out of the said chamber, for the purpose above specified. 5th. In a washing machine, the combination, with a receptacle b , with movable or collapsing sides or ends arranged to revolve in a box or case a , of one or more perforated diaphragms or partitions b_5 , for the purpose above specified. 6th. In a washing machine, a box or case a , divided into compartments, in each of which is arranged a rotary perforated washing chamber or receptacle b , having movable sides, substantially as and for the purpose set forth. 7th. The combination, with the rotating receptacle or receptacles b , of the shaft C, bearing C₁, standard E, studs C₂, block H, bracket I, toothed wheels D, G, gear with a recessed toothed wheel J, friction wheels K, K₂, cam L, toothed wheel N, pinion O, mitre or bevel wheels P, Pr, worm wheel Q and worm S for automatically reversing the motion of the said rotating receptacles at predetermined periods, substantially as described. 8th. The basket or cage l secured to one of the sides of the revolving receptacle b , and intended to contain the articles to be washed, and having hinged bolts m and wing nuts m_1 for securing the said basket or cage in position, and permitting its removal with the said side from the revolving receptacle b , substantially as described.

No. 32,054. Thread Holder and Cutter.*(Porte-fil et coupe-fil.)*

Mary E. West, Elmira, N. Y., U. S., 10th August, 1889; 5 years.

Claim.—The combination, with a spool and a thread wound thereon, of a metallic plate secured to the spool and provided with a slit in its outer end, a knife upon its inner end, and a slitted rubber secured between the knife and slitted, substantially as described.

No. 32,055. Art of Lasting Boots and Shoes.*(Mode d'enformer les chaussures.)*

John Patten, New York, N. Y., U. S., 10th August, 1889; 5 years.

Claim.—1st. The herein described method of stretching the uppers of boots and shoes in lasting, by the rubbing action of a moving flexible surface, which is pressed laterally toward the toe and sides of the last, and against those parts of the upper intervening between said surface and said parts of the last by a plurality of pressing instrumentalities, which are stationary, relatively to the movement of such surface, substantially as described. 2nd. The herein described method of stretching the uppers of boots and shoes in lasting, by the rubbing action of moving flexible surfaces which are pressed against the inner and outer sides of the upper to be stretched by instrumentalities which are stationary, relatively to the movement of said surfaces, substantially as described. 3rd. That improvement in the art of lasting boots and shoes, which consists in stretching the upper over the last between moving flexible surfaces applied inside and outside of the upper, holding the upper in position after such stretching operation, and folding the edge of the upper over upon the insole, and securing the same, substantially as described.

No. 32,056. Machinery for Lasting Boots and Shoes. (Machine à enformer les chaussures.)

John Patten, New York, N. Y., U. S., 10th August, 1889; 5 years.

Claim.—1st. The combination, with a last, of a rubbing stretcher, substantially as described, for acting upon the outside of the upper, and lateral pressers consisting of a plurality of independent fingers, which are stationary relatively to the movement of the stretcher for pressing said stretcher, and the upper against the toe and sides of the last, substantially as described. 2nd. The combination, with a last, of a rubbing stretcher, substantially as described, for acting upon the outside of the upper, lateral pressers which are stationary relatively to the movement of the stretcher for pressing said stretcher and the upper into contact, and a shield interposed between said pressers and stretchers, substantially as described. 3rd. The combination, with a last, of rubbing stretchers, substantially as described, for acting respectively upon the inside and outside of the upper, and lateral pressers for pressing said stretchers and the upper into contact, substantially as described. 4th. The combination, with a last, of rubbing stretchers, substantially as described, for acting respectively upon the inside and outside of the upper, lateral pressers for pressing said stretchers and the upper into contact, and a shield interposed between said pressers and the outer stretcher, substantially as described. 5th. The combination, with a last, of inner, outer, and intermediate rubbing stretchers, arranged to receive the upper, and its lining or cap between them respectively, and lateral pressers for pressing said stretchers, and the upper including its lining or cap into contact, substantially as described. 6th. The combination, of a last and a rubbing stretcher, substantially as described, for acting upon the outside of the upper, with lateral pressers composed of adjustable fingers which are stationary relatively to the movement of the stretcher, for pressing the stretcher and the upper against the last, substantially as described. 7th. The combination, with a last and a rubbing stretcher, substantially as described, for acting upon the outside of the upper, of lateral pressers composed of adjustable fingers for pressing the stretcher and the upper against the last, and a shield interposed between said fingers and stretcher, substantially as described. 8th. The combination, with a last, of rubbing stretchers, substantially as described, arranged to receive the upper between them, and lateral pressers composed of adjustable fingers for pressing the stretchers and the upper against the last, substantially as described. 9th. The combination, with a last, of rubbing stretchers, substantially as described, arranged to receive the upper between them, lateral pressers composed of adjustable fingers for pressing the stretchers and the upper against the last, and a shield interposed between said fingers and the outer surface, substantially as described. 10th. The combination, in a lasting machine, of the last, and means for supporting the last, a rubbing stretcher, substantially as described, for acting upon the outside of the upper, lateral pressers consisting of a plurality of independent fingers which are stationary relatively to the movement of the stretcher for pressing the stretcher and the upper against the toe and sides of the last, and side and heel and toe crimpers for holding over the edge of the upper, substantially as described. 11th. In a lasting machine, a rubbing stretcher consisting of flexible material suspended from a head-plate, with its lower edge hanging free and extending around the toe, and along the sides of the last where the upper is to be stretched, substantially as described. 12th. In a lasting machine, an inner rubbing stretcher consisting of elastic strips *n*, suspended from a head-plate and adapted to be inserted between the last and the portions of the upper which are to be stretched, substantially as described. 13th. In a lasting machine, an inner rubbing stretcher consisting of elastic strips *n* suspended from a head-plate, and adapted to be inserted between the last and the portions of the upper which are to be stretched, and having the legs *n* for regulating the extent of such insertion, substantially as described. 14th. The combination, in a lasting machine, of an inner rubbing stretcher, and an outer rubbing stretcher arranged one within the other, and adapted to extend around the portions of the last where the upper is to be stretched, the inner stretcher being adapted to be inserted between the last and the upper, and the outer stretcher to extend outside the upper, substantially as described. 15th. The combination, in a lasting machine, of inner and outer rubbing stretchers, arranged

one within the other and adapted to receive the upper between them, and to extend around the portions of the last where the upper is to be stretched, the inner stretcher being composed of elastic material, and the outer stretcher of leather, or similar flexible material, and lateral pressers for pressing the stretchers and the upper into contact, substantially as described. 16th. The combination, in a lasting machine, of the inner outer rubbing stretchers suspended from head plates *n*, *m*, which overlap one another, substantially as described. 17th. In a lasting machine, the combination, with lateral pressers arranged to press toward the last, of a wedge shaped head *o* for operating the pressers, substantially as described. 18th. The combination, in a lasting machine, of a rubbing stretcher, lateral pressers, and an expandible shield interposed between said stretcher and pressers, substantially as described. 19th. The combination, in a lasting machine, of rubbing stretchers, lateral pressers, and an expandible shield interposed between said pressers and the outer stretcher, substantially as described. 20th. In a lasting machine, the combination, with the independently adjustable supports *o*, of the prasser fingers *o* pivoted to said supports, and the springs *o* for normally retracting said fingers, substantially as described. 21st. In a lasting machine, the combination, with the prasser fingers *o*, of the independently adjustable supports *o* for said fingers, and the locking frame provided with the clamping plates, and blocks *o*, *o* for said supports, substantially as described. 22nd. In a lasting machine, the combination, with inner and outer rubbing stretchers, of means, substantially as described, for moving the outer stretcher in advance of the inner stretcher, substantially as described. 23rd. In a lasting machine, the combination, with the inner and outer rubbing stretchers, one supported upon the other, of means, substantially as described, for imparting a vertical movement to the outer stretcher, and through that to the inner stretcher, with lost motion between the two, substantially as described. 24th. In a lasting machine, the combination, with the inner and outer rubbing stretchers, one supported upon the other, of the standards *m*, cross-heads *m*, and cams *m* for imparting a vertical movement to the stretchers, substantially as described. 25th. In a lasting machine, the combination, with the inner and outer rubbing stretchers, and means for imparting a vertical movement to them, of the standard *m*, and the catch for engaging with said standard to retain the stretchers in their raised position, substantially as described. 26th. In a lasting machine, the combination, with the last, of the loose removable jack, substantially as described, for supporting the last in the machine, substantially as described. 27th. The combination, with the last, the loose removable jack for supporting the last from beneath, and a down-hold for the last, of inner and outer rubbing stretchers for stretching the upper around the last, and lateral pressers for pressing said stretchers and the upper against the last, substantially as described. 28th. The combination, with the last, and an underneath support for the last, of a down-hold for the last, inner and outer rubbing stretchers for stretching the upper around the last, and lateral pressers for pressing said stretchers and the upper against the last, substantially as described. 29th. In a lasting machine, the combination, with the last, and means for supporting it from beneath, of a telescopic down-hold consisting of two members, one of said members being yielding with respect to the other, substantially as described. 30th. In a lasting machine, the combination, with the last, of a telescopic down-hold composed of an inner and an outer member, and means, substantially as described, for moving one member away from the last in advance of the other, substantially as described. 31st. In a lasting machine, the combination, with the rubbing stretchers, having the standards *m*, of the catch *k*, and the vertically moving guide rod *k* carried by the down-hold mechanism, substantially as described. 32nd. In a lasting machine, the combination, with the telescopic down-hold composed of inner and outer members, each having a vertical movement independent of the other, of means, substantially as described, for depressing said members simultaneously, substantially as described. 33rd. In a lasting machine, the combination, with the telescopic down-hold composed of inner and outer members, each having a vertical movement independent of the other, of means, substantially as described, for depressing said members independently, substantially as described. 34th. In a lasting machine, the combination, with the telescopic down-hold composed of outer and inner members, and springs for raising said members independently of each other, of the bar *k*, shaft *k*, and cams *k* for depressing said members simultaneously, substantially as described. 35th. In a lasting machine, the combination, with the telescopic down-hold composed of inner and outer members, of spring for raising said members independently of each other, and an automatic tripper for releasing said outer member, substantially as described. 36th. In a lasting machine, the combination, with the last, and an underneath support for the last, of a telescopic down-hold for the last composed for an outer member, which conforms approximately to the shape of the insole, and bears upon its margin, and an inner member which bears upon the insole inside the outer member, and means for raising the outer member in advance of the inner member, substantially as described. 37th. The combination, with means for supporting the last, and for stretching the upper around the last, of side-crimpers carried upon oscillating arms *s*₁₀, and eccentrics *s*₁₄ for rocking said arms to move the crimpers to and from each other, substantially as described. 38th. In a lasting machine, the combination, with the last, and means for stretching the upper around the last, of side-crimpers carried upon oscillating arms *s*₁₀, and the eccentrics *s*₁₄ forming the fulcrum for said arms, substantially as described. 39th. The combination, with the last, and means for stretching the upper around the last, of side-crimpers carried upon oscillating arms *s*₁₀, the eccentrics *s*₁₄ forming the fulcrum for said arms, and the driven eccentrics *s*₂₂ connected to said fulcrum to impart a rising and falling movement to said crimpers, substantially as described. 40th. The combination, with the last, and means for stretching the upper around the last, of side-crimpers carried upon oscillating arms *s*₁₀, the eccentric *s*₁₆ forming the fulcrum for said arms, the driven eccentrics *s*₂₂ connected to said fulcrum to impart a rising and falling movement to the crimpers, and the eccentrics *s*₁₄ for imparting an oscillating movement to the arms carrying the crimpers, substantially as described. 41st. In a lasting machine, the herein described side-crimpers consisting of a head *s*, the loose removable head-blocks *s*₃ fitting into a chamber in said head, the loose removable blocks *s*₂, and clamping screw *s*₇ for locking said blocks *s*₃ in any position to

which they are adjusted, and the crimping fingers having shanks which enter openings in said head blocks, and are adjustable therein, substantially as described. 42nd. The combination, with the last, and means for stretching the upper around the last, of heel and toe crimpers, each composed of a number of radially-arranged independently-moving crimping fingers, and independent means, substantially as described, for imparting a rising and falling movement to said fingers, independently of their movement toward and from the last, substantially as described. 43rd. In a lasting machine, the combination, with the independently-moving radially-arranged crimping fingers *t*, of the adjustable spheroidal headblocks *s* carrying said fingers, and resting concave bearings, whereby said fingers can be adjusted to different inclination both vertically and laterally, substantially as described. 44th. In a lasting machine, the combination, with the radially-arranged crimping fingers *t*, of the threaded rods *o*, *o*, *o*, *o*, connected to said fingers, and the engaging gears *t*¹⁰, *t*¹¹ for imparting simultaneous and independent movement to said fingers, substantially as described. 45th. In a lasting machine, the combination, with the radially-arranged crimping fingers *t*, of the threaded rods *o*, *o*, *o*, *o*, connected to said fingers, the engaging gears *t*¹⁰, *t*¹¹ for imparting simultaneous and independent movement to said fingers, and the rack and pinion for imparting movement to one of said threaded rods, substantially as described. 46th. In a lasting machine, the combination, with the radially-arranged crimping fingers *t*, of the threaded rods *o*, *o*, *o*, *o*, connected to said fingers, the engaging gears *t*¹⁰, *t*¹¹ for imparting simultaneous and independent movement to said fingers, the racks, and pinion for imparting movement to one of said threaded rods, and the universal joint *u* through which said movement is imparted, substantially as described. 47th. In a lasting machine, the combination, with the independently-moving radially-arranged crimping fingers *t*, of the driven eccentric *z*, and connections, substantially as described, for imparting a rising and falling movement to said fingers, substantially as described. 48th. In a lasting machine, a heel or toe crimper consisting of a number of independently-moving screw-actuated radially-arranged crimping fingers *t*, which converge and overlap as they move toward, and diverge as they move away from the last, substantially as described. 49th. In a lasting machine, the combination, with a stretching mechanism for stretching the upper around the last, and crimpers for folding over its edge, of a driving shaft, and connections for operating said stretching mechanism and crimpers in proper sequence, a clutch for starting and stopping said shaft, a lever for operating the clutch, and automatic tripping mechanism, substantially as described, for tripping said clutch to stop the shaft after the stretching, and after the folding operations respectively, and an automatic tripping mechanism, substantially as described, for tripping the lever to disconnect it from the clutch after the clutching has been effected, substantially as described. 50th. The combination, in a lasting machine, of means for supporting the last, inner and outer rubbing stretchers, and co-operating lateral pressers for stretching the upper around the last, substantially as described, and side and heel and toe crimpers for folding over the edge of the upper, substantially as described. 51st. The combination, in a lasting machine, of an underneath support for the last, a telescopic downhold composed of inner and outer members, each having a vertical movement independent of the other, rubbing stretchers, and co-operating lateral pressers for stretching the upper around the last, substantially as described, and side and heel and toe crimpers, substantially as described. 52nd. The combination, in a lasting machine, of the removable jaw for supporting the last, the telescopic downhold consisting of two members, each having a vertical movement independent of the other, rubbing stretchers, and co-operating lateral pressers for stretching the upper around the last, substantially as described, side crimpers, and heel and toe crimpers composed of radially-arranged independent moving crimping fingers, substantially as described. 53rd. In a last machine, the combination, with the last, and means for stretching the upper around the last, of lateral pressers, substantially as described, arranged around the toe, and along the sides of the last, where the upper is to be stretched, and adapted to be closed against the last to hold the upper in its stretched condition after the stretching, and mechanism for simultaneously closing said pressers against the last, substantially as described.

No. 32,057. Protecting the Bottoms of Ladies' Skirts. (*Protection des bas de robes des femmes.*)

William B. Rankin, Saint John, N.B., 10th August, 1889; 5 years.

Claim.—1st. The combination of the pin *A* with the rubber cushion *B*, substantially as and for the purposes set forth. 2nd. The combination of the pin *A* and cushion *B* with any suitable material (but not claiming the material), as a skirt protector, adjusted as described.

No. 32,058. Lasting and Upholstering Tool. (*Outil de cordonnier et de tapissier.*)

Joseph R. Jacques, Hancock, Mich., U.S., 10th August, 1889; 5 years.

Claim.—The herein described tool, consisting of the handles *A*, *E*, the downwardly curved and corrugated jaws *C*, *D*, the projection *B* on the jaw *C*, and the curved and corrugated lip *H*, and drawing fulcrum *H*¹, and screws *h*¹, as specified.

No. 32,059. Swing. (*Balançoire.*)

Hiram H. Fowler, Meadville, Penn., U.S., 10th August, 1889; 5 years.

Claim.—1st. In a swing, the combination of a supporting frame *A*, a frame *E* pivoted to the upper part thereof and carrying pivoted seats, rearwardly pivoted treadles and diagonally arranged ropes, the latter connecting the front of treadle with the opposite side of the cross-bar of the supporting frame, as shown, substantially as herein set forth. 2nd. In a swing, the supporting frame, provided with a top cross-bar, and the cap pieces *G*, *G* fastened across it, the latter being extended out on each side from the swing, and provided with

end rings or eyes *P*, *P*, in combination with the treadle ropes, as and for the purpose set forth. 3rd. In a swing, the combination, with the frame *A*, ropes *O*, *O* and pivoted bars *F*, of the arms *Q*, *Q* pivoted to the said bars above the seat at their rear ends, and provided in front with the handle *Q*¹, as shown and for the purpose set forth. 4th. The combination, with the frame *A*, swing bars *E* and ropes *O*, *O* having the hooks and eyes *V*, *W*, of the arms *Q*, *Q*, slotted at their front ends and pivoted at their rear ends to the swing bars *E*, the connecting handle piece *Q*¹ held adjustably in said slots by the eye-bolts *V*, whereby said handle-piece and ropes may be correspondingly adjusted, as described. 5th. In a swing, the combination of the swing bars *E*, having the forwardly and rearwardly projecting arms *Q*, and the foot treadle, in combination with ropes *O*, *O* from the upper end of the frame to the outer end of the hand bars *C*, and the links *Y* connecting the outer ends of the foot and hand treadles, substantially as herein set forth.

No. 32,060. Vehicle Hub. (*Moyeu de roue.*)

Thomas J. Reid, Gananoque, Ont., 10th August, 1889; 5 years.

Claim.—1st. A vehicle hub consisting of a split or checked wooden core, metallic shells encasing said core, and a wooden wedge for expanding said core within the casing, substantially as and for the purpose set forth. 2nd. A hub for vehicle wheels, having a wooden core made from cracked hub blocks, first compressed, and subsequently expanded within a metallic shell, substantially as and for the purpose described. 3rd. In a hub for vehicle wheels, the combination of the wooden core *B* and metallic shells *L* and *F* having oppositely beveled inner edges, so inclined that the edge of one will be upset by contact with the other, as the shells are driven in place, substantially as and in the manner described. 4th. In a hub for vehicle wheels, the combination of the wooden core *B* and metallic shell *F* extending beyond the middle of the hub, having its inner portion thickened so as to form an inwardly projecting shoulder, substantially as and in the manner described. 5th. In a hub for vehicle wheels, the combination of the wooden core *B*, the metallic shell *F*, with inner portion thickened to form inwardly-projecting shoulder and inner edge beveled upward, and the metallic shell *L*, with inner edge beveled downward, substantially as and for the purpose described. 6th. As an improved article of manufacture, a hub made up of a wooden body having a single longitudinal split, and a wedge-shaped expanding piece tapering both longitudinally and transversely, said hub being encased by a metallic shell, within which it is expanded by the wedge-shaped piece.

No. 32,061. Apparatus for Stirring up Fluids, Powder and Similar Substances.

(*Appareil pour agiter les fluides, la poudre et autres corps similaires.*)

Reinhold Händel, Leipzig, Germany, 10th August, 1889; 5 years.

Claim.—1st. In an apparatus of the type herein described for stirring, the arrangement herein set forth, consisting of a cross-head *i*, having arms or stirrers *r* that rotate with the cross-head, said arms having a swinging or rocking movement thereon, and clamp rings *s* fitting in the grooved supports *l*, and provided with thumb-screws *m*, substantially as described. 2nd. In a stirring apparatus, such as claimed under claim 1, the arrangement of the rod *d* with the clamp contrivance *f* at its upper end, the arm or bracket *a*, on which the shaft *b* is carried, provided at one end with the fly-wheel *a*, and at the other with the bevel wheel *c*, which gears into the bevel wheel *e* on the cross-head, and the arrangement of the two clamp devices *i*, one of which, the clamp *o*, serves to hold the vessel containing the substance to be stirred by means of adjustable arms *p*, *p*, and the other, the clamp *e*, which serves to fix the apparatus to a table or other object, substantially as described.

No. 32,062. Saw Table Gauge.

(*Jauge de table de sciérie.*)

Freeman M. Teeguarden, Colfax, Ind., U. S., 10th August, 1889; 5 years.

Claim.—In a saw table gauge, the combination of the gauge bar or frame *C*, the rack-bars *F*, *F*, attached thereto, the pinions *I*, *I*, engaging the teeth upon the rack-bars and fast upon a shaft journaled in the main frame, and having an operating wheel *J* on one end thereof, the clamps *G* for locking the gauge-bar in any adjusted position, the brackets *E*, *E*, on the gauge-bar *C*, and the curved dogs *D*, *D* pivoted upon the face of the brackets, so that their lower ends shall rest upon the material as it is fed to the saw, substantially as described.

No. 32,063. Eye-Glass Polisher.

(*Polissoir de lunette.*)

Edward E. Thorpe, New York, N. Y., U. S., 10th August, 1889; 5 years.

Claim.—1st. A polisher, consisting essentially of an outer backing or body of flexible material, and an inner sheet of polishing material, the sheet of polishing material, being connected to the backing or body, substantially as described. 2nd. A polisher, consisting essentially of an outer backing or body, a sheet of polishing material, as chamois, and an interposed layer of viscid material, substantially as described.

No. 32,064. Boring Machine. (*Machine à forer.*)

Henry L. Haskell, Ludington, Mich., U. S., 10th August, 1889; 5 years.

Claim.—1st. A boring machine, comprising a drill and a carriage in which the said drill is mounted, to turn and travelling with the board to be bored, substantially as shown and described. 2nd. A

boring machine, comprising a carriage mounted to travel with the board to be drilled, a drill mounted to turn in said carriage and having a rotary motion, and automatically fed downward and upward to engage and disengage the board to be drilled, substantially as shown and described. 3rd. A boring machine, comprising a carriage mounted to slide forward and backward, and actuated by the motion of the board to be drilled, a drill shaft mounted to turn in the said carriage and supporting the drill, and means, substantially as described, for automatically moving the drill shaft up and down, so that the drill engages and disengages the board to be drilled, as set forth. 4th. In a boring machine, the combination, with a carriage having forward and backward sliding motion and actuated by the board to be drilled, of a drill shaft mounted to turn on the said carriage and carrying a drill, an arm connected with the said drill shaft and carrying a friction roller and fixed guide-ways, on which travels said friction roller to move said drill shaft up and down in its bearings, substantially as shown and described. 5th. In a boring machine, the combination, with two rollers, between which passes the board to be drilled, of a sprocket chain connected with one of the said rollers, and provided with a lug, a carriage mounted to slide forward and backward, and provided with a slotted bracket engaged by the said sprocket chain lug, and a drill mounted on the said carriage and adapted to engage the board to be drilled, substantially as shown and described. 6th. In a boring machine, the combination with two rollers, between which passes the board to be drilled, of a sprocket chain connected with one of the said rollers, and provided with a lug, a carriage mounted to slide forward and backward, and provided with a slotted bracket engaged by the said sprocket chain lug, a drill shaft mounted to turn on the said carriage and carrying a drill, and means, substantially as described, for automatically raising and lowering said drill shaft, as set forth. 7th. In a boring machine, the combination, with two rollers, between which passes the board to be drilled, of a sprocket chain connected with one of the said rollers and provided with a lug, a carriage mounted to slide forward and backward, and provided with a slotted bracket engaged by the said sprocket chain lug, a drill shaft mounted to turn on the said carriage and carrying a drill, a cam groove on the frame of the machine, and a roller on the carriage engaging said groove, as set forth.

No. 32,065. Composition of Matter to be Used for Cleansing Cloth, Woolens, other Fabrics, Brass and other Metals, Purging Boilers, Laundry and Domestic Purposes, and for Softening and Purifying Water. (*Composition de matieres pour servir à nettoyer les draps, lainages, autres tissus, le bronze et autre métaux, purger les chaudières, pour des fins de buanderie et domestiques, et pour adoucir et purifier l'eau.*)

George Williams, Winnipeg, Man., 10th August, 1889; 5 years.

Claim.—A compound, composed of silicate of soda, chloride of calcium, tungstate of soda, phosphate of soda and water, substantially in the proportions and for the purposes set forth.

No. 32,066. Syringe. (*Seringue.*)

Jay W. Kirkwood, Oakesdale, W. T., U.S., 10th August, 1889; 5 years.

Claim. 1st. A medical syringe, having inner and outer chambers connected with each other, at or near their rear ends, and both having openings through the forward end of the syringe, in combination with a piston fitted to work within the inner chamber, whereby said syringe operates simultaneously to discharge a diluting or medicated fluid, and to remove by suction foreign matter adhering to the mouth or neck of the womb, also the inner chamber of the syringe serves as a vessel to carry off the foreign matter, substantially as specified. 2nd. In a medical syringe, having inner and outer tubes, combined to leave a channel or space lengthwise between them, the inner one of said tubes constructed with a series of perforations at or near its rear end, arranged to establish communication between the two tubes, in combination with a piston fitted to work within the inner one of said tubes essentially as described. 3rd. In a medical syringe, the cup-shaped nozzle adapted to fit the mouth of the womb and provided with a series of discharge apertures outside of the suction cavity in the nozzle, and with a suction aperture in the back of the nozzle, whereby a sucking action is combined with a discharging action of water, or other fluid, in jets, substantially as specified. 4th. In a medical syringe, the combination, with the outer tube A, of the inner tube C arranged to leave a channel or space between the two tubes, and provided with a series of perforations *k* near its rear end, establishing communication between the interior of the inner tube and said channel, the cup-shaped nozzle B, having a suction aperture *e* in its back, and provided with exterior ducts *f* opening through the front end of the nozzle on its outer side, and connecting at their inner ends with the channel between the two tubes, a cap closing the rear end of the syringe, and a piston fitted to work within the inner tube and provided with an operating rod passing out through the cap, essentially as shown and described as and for the purposes herein specified.

No. 32,067. Axle and Hub Attaching Device. (*Appareil pour ajuster les essieux et moyeux.*)

Samuel Mirfield, Hastings, Ont., 12th August, 1889; 5 years.

Claim.—1st. The combination, with the hub A, of the metallic shell B surrounding the inner end of the hub, and provided with a neck E screw-threaded on the interior, the axle I having a removable collar M screwing thereon, and the screw-cap G covering the collar and screwing on the neck of the metallic shell, as set forth. 2nd. The

combination, with the axle I, having an indentation K, and the screw collar M having a radial screw hole, of the screw O, and screw cap or nut G having a hole P to hold the collar and allow of its removal, as set forth.

No. 32,068. Automatic Waggon Brake.

(*Frein automatique de wagon.*)

William Aylesworth, Sr., and James H. Mold, Blossburg, Penn., U.S., 12th August, 1889; 5 years.

Claim.—1st. In an automatic waggon brake, the combination, with the running-gear, of the tongue having longitudinal slots near its front and rear ends, the plate arranged to slide in the rear slot, the bracket secured to the upper edge of said plate, the horizontal plate secured to the lower edge of the latter, and having a forwardly extending rod connected with a pin sliding in the front slot of the tongue, and carrying the neck-yoke, and the angular link hinged at the rear end of the horizontal sliding plate, and connected by intermediate mechanism with the brake levers, substantially as set forth. 2nd. The combination, with the tongue having the slot I, of the vertical plate J sliding longitudinally in said slot, the bracket secured permanently at the upper edge of said plate and adapted to carry the whiffletrees, the horizontal plate M secured permanently at the lower edge of said plate and having the forwardly extending rod N connected with the neck-yoke, a link hinged to the rear end of the horizontal sliding plate M, and connected by intermediate mechanism with the brake levers, and a pin adapted to be inserted detachably through a perforation in the bracket L into the tongue, substantially as set forth. 3rd. The combination, with the running-gear, and the tongue, of the levers mounted on the running-gear and carrying the brake shoes, the rock shaft mounted on the running-gear in front of the levers, and having an upwardly-projecting arm T, the links connecting said arm with the levers, the parallel arms R depending from the rock shaft, the angle lever pivoted at one end to the running-gear, and at the other end to the arms R, the push bar pivoted between the angle levers, and devices mounted on the tongue to operate the push bar, as set forth.

No. 32,069. Inhaler. (*Inhalateur.*)

Henry T. Welch and George W. Hanson, San Jose, Cal., U.S., 12th August, 1889; 5 years.

Claim.—An inhaler, consisting of the nose-covering or casing A, with breathing apertures, the base-plate at the perforated top-plate *az*, and the drawer B, substantially as described.

No. 32,070. Yarn Reel. (*Dévidoir.*)

George Titus, Fennimore F. Fletcher and George P. Stout, (assignees of John A. Kaspar, Jr.), Pomeroy, Ohio, U.S., 12th August, 1889; 5 years.

Claim.—1st. The combination, with the vertical shaft, of the arms E pivotally secured to the upper end thereof, the holders pivotally secured to the lower ends of said arms, the arms G pivoted to the said arms and connected with the holders, and also pivotally connected to a disk sliding on said shaft, substantially as shown and described. 2nd. The combination, with the vertical shaft, and the arms E pivotally connected to the upper end thereof, of the sliding disk on said shaft, the arms G pivotally connected at one end to said disk, the holders pivotally secured to the lower ends of the arms E below their centre, and the rods pivotally connecting the upper ends of the arms G with the said holders above their centre, substantially as shown and described. 3rd. The combination, with the vertical shaft, and the arms E pivotally connected with the upper end thereof, of the sliding disk on the shaft, the holders pivotally connected with the lower ends of the arms E, the arms G pivotally connected at one end with the said disk, and near the other end pivotally connected with the arms E, and formed at their connection with said arms with the bands F, and the rods pivotally connecting the extended ends of the arms G with the holders, substantially as shown and described.

No. 32,071. Water Current Motor.

(*Moteur à eau.*)

Andrew A. Bessemer and Charles E. Williamson, Tecumseh, Mich., U.S., 12th August, 1889; 5 years.

Claim.—1st. A current motor consisting of a protecting pier, a submerged pier below the protecting pier, sprocket wheels journaled at the ends of said submerged pier and submerged therewith, endless chains connecting said sprocket-wheels, and a series of pivoted buckets carried on said endless chains, substantially as shown and described. 2nd. A current motor consisting of a protecting pier, two submerged piers below said protecting pier and diverging from each other, sprocket wheels carried on upright shafts at the ends of said submerged piers, two endless chains connecting the sprocket wheels at the respective ends of each submerged pier, and a series of pivoted hollow buckets carried on said endless chain, substantially as shown and described. 3rd. In a current motor, the combination, with the piers, and the vertical shafts having sprocket wheels, of the endless chains carrying the hinged buckets, and having anti-friction rollers bearing against the piers, substantially as described. 4th. In a current motor, the combination, of the piers 2 having the channels 44 therein, the endless chains 6, and the rods 42, carrying thereon the friction rollers 45 moving in said channels at such an angle as to normally prevent their being withdrawn, substantially as described. 5th. In a current motor, the herein described endless bucket-carrying chains having hollow links, substantially as described. 6th. In a current motor, the combination, with the endless chains, of the hinged hollow buckets, substantially as described. 7th. In a current motor, the combination of an endless chain, the buckets hinged to the same, the arms connected to said buckets, and having eyes or apertures encircling the horizontal rods or side bars of the chain links, bevelled stops or catches upon said side bars, and mechanism for lifting the said apertured rods out of engagement with said catches, substan-

tially as set forth. 8th. In a current motor, the combination of an endless chain, the buckets carried on the same, the arms connected to said buckets, and having eyes or apertures encircling the horizontal rods or side bars of the chain links, bevelled stops or catches upon said side bars, vertical rods connecting the outer ends of the apertured arms, and having laterally extending lugs, a horizontal longitudinal bar mounted upon a series of cranks or pivoted rods, and adapted to bear against the under side of said lugs, and mechanism for operating said horizontal bar, substantially as set forth. 9th. In a current motor, the combination of an endless chain, the buckets carried on the same, the arms connected to said buckets and having eyes or apertures encircling the horizontal rods or side bars of the chain links, bevelled stops or catches upon the said side bars, vertical rods connecting the outer ends of the apertured arms and having laterally extending lugs, a horizontal longitudinal bar mounted upon a series of cranks or pivoted rods, and adapted to bear against the under sides of said lugs, counter shafts geared to the vertical chain-carrying shafts, disks mounted in vertically adjustable bearings and having their peripheries provided with worm gearing to engage worms upon said counter shafts, and ratchets to engage suitably arranged pivoted pawls, and pin means connecting said wheels or disks, with cranks upon the inner ends of rock shafts, the outer ends of which carry each one of the supporting cranks of the longitudinal bars that operate the arms connected to the buckets, substantially as and for the purpose set forth. 10th. In a current motor, the combination of the endless chain, the buckets carried on the same, the arms connected to said buckets, and having eyes or apertures encircling the horizontal rods or side bars of the chain links, bevelled stops or catches upon said side bars, vertical rods connecting the outer ends of the apertured arms, and having laterally extending lugs, a horizontal longitudinal bar mounted upon a series of cranks or pivoted rods, and mechanism adapted to connect one of said cranks or pivoted rods with a counter shaft geared to one of the vertical chain-carrying shafts so as to receive motion temporarily from said counter shaft, substantially as set forth.

No. 32,072. Button Hole Attachment for Sewing Machines. (*Appareil à boutonnières pour les machines à coudre.*)

Henry J. Davison, (assignee of Henry J. Williams), New York, N.Y., U.S., 12th August, 1889; 5 years.

Claim.—1st. In a button hole attachment for sewing machines, the reciprocating needle bar, the adjustable hammer dog attached to said needle bar, the cutting knife adjustably attached to the reciprocating knife lever arm, the pivoted operating lever loosely connected with said knife lever arm, to move the knife forward and under the needle bar hammer, all combined and arranged to operate substantially as and for the purpose described. 2nd. The combination, in a button hole sewing machine, of the sewing apparatus, substantially as shown, and the button hole cutting device consisting of a pivoted reciprocating knife arm, the knife and the operating lever, the hammer dog attached to the needle bar, and the needle bar and the knife slot in the cloth plate, all combined and arranged to operate substantially as and for the purposes set forth. 3rd. The combination, in button hole attachments for sewing machines, of the sewing devices, substantially as shown, the button hole cutting devices, substantially as shown and described, and the spring presser wire 19, constructed and arranged to operate, substantially as shown and described, to hold the cloth for oversewing the said button hole. 4th. In a button hole cutting and re-sewing attachment for sewing machines, the reciprocating cloth plate C, the needle slot 29, the knife slot 27, the cloth clamping plate 33, the needle bar 1, and the hammer dog 2, the cutting knife 6, and its supporting arm 5, the lever 18, and forked piece 17 attached thereto, the retractile spring 9, the knife guide 11, and the re-sewing spring presser wire 19, all combined and arranged to operate substantially as and for the purpose set forth. 5th. In a button hole cutting attachment for sewing machines, the knife arm 5, and knife 6, the forked piece 17, the spring 9, the lever 18, and the guide plate 11, all combined and arranged to operate substantially as described. 6th. In button hole cutting and re-sewing attachments for sewing machines, the knife arm 5 and knife 6, the forked piece 17, the spring 9, the lever 18, the knife arm guide 11, the sliding piece 12, and the re-sewing device 19, all combined and arranged to operate substantially as described. 7th. In a button hole cutting attachment for sewing machines, the reciprocating needle bar, and hammer dog attached thereto, the cutting knife attached to the vibrating lever arm arranged to be moved, the knife under the needle bar hammer dog, at the will of the operator, for the purpose of slitting the cloth by the downward throw of the said needle bar, substantially as described. 8th. In a button hole cutting attachment for sewing machines, the knife arm 5, the cam slot 16, the ear piece 14, the fulcrum pin 23, and the vibrating screw 15, sliding in slot *h* and arranged to receive transverse motion from cloth plate C, substantially as set forth. 9th. The combination of the circular oscillating plate 3, having slots 27 and 29, and adjust guides 31, with the cloth plate C, arranged as shown and described, to move between said guide 31, as and for the purposes hereinbefore set forth.

No. 32,073. Barrel Churn. (*Baratte circulaire.*)

The Wortman and Ward Manufacturing Company, London, (assignee of Joseph Drader, London, and John Richmond, Blyth), Ont., 12th August, 1889; 5 years.

Claim.—1st. In a revolving churn, an adjustable projection E extending from the frame A, or other suitable support, in combination with an arm D, substantially as and for the purpose set forth. 2nd. In a churn, the drip G in combination with the conduit F, substantially as and for the purpose set forth. 3rd. The combination of the cover I, and plate H, or other suitable support, one having recesses *i*, and the other projections *h*, and means for clamping them together and to a churn, substantially as and for the purpose set forth. 4th. In a revolving churn, the combination of the frame A, vessel B, trunnions C, conduit F having drip G, crank arm D, adjustable projection E, cover I, and plate H, or other suitable support, one having recesses *i*, and the other projections *h*, substantially as and for the purposes set forth.

No. 32,074. Breast Yoke. (*Volée d'avant.*)

Gilbert Van Camp and William N. Van Camp, Elizabethtown, Ind., U.S., 12th August, 1889; 15 years.

Claim.—1st. The combination, in a breast-yoke, of a joint block mounted pivotally in a housing upon the end of the tongue or pole, and the breast-yoke proper mounted and adapted to swivel upon a stem forming part of said joint block. 2nd. The combination, in a breast yoke, of a housing secured to the end of the pole, and a joint block supporting the yoke mounted therein on a pivot bolt, and a sleeve surrounding said pivot bolt slightly lower than the thickness of said joint block, substantially as described and for the purposes specified. 3rd. The combination, in a breast yoke, of a joint block secured to the tongue, the stem portion of which extends through the base portion of the neck yoke proper, said stem portion being surrounded by a sleeve slightly longer than the distance through the portion through which it extends, substantially as shown and described. 4th. The combination, with a breast-yoke adapted to move pivotally upon the end of the pole or tongue, and a pin, whereby it may upon occasion be secured to position, said pin being provided with a small projection upon one side of its head, whereby, by reversing said pin, said movable portion may be either left free or secured rigidly in position, and the openings for the pin at the same time kept covered, substantially as set forth. 5th. The combination of the pole A, the housing B, the joint block C and the breast-yoke proper D, said several parts being constructed and operating substantially as shown and described. 6th. The combination of a pole, a housing thereon, and a breast-yoke secured in said housing, that portion which connects the breast-yoke in the housing, having a rearward projection, and the housing having an opening larger than said projection, and a pin adapted to pass down through said housing, and either through or along-side said projection, thus securing the breast-yoke either directly in line with the pole, on to one side thereof, substantially as set forth.

No. 32,075. Paper Bag. (*Sac de papier.*)

John P. Osderdonk (assignee of Charles B. Stilwell), Philadelphia, Penn., U.S., 12th August, 1889; 5 years.

Claim.—As a new article of manufacture, a bellows-sided, satchel-bottomed paper bag, having its bottom formed with side folds, substantially equal in breadth to one-half the breadth of its tucked-in sides, its final folds formed with parallel-sided flaps, of such a breadth that they will overlap the said folds sufficiently to form a strong pasted seam therewith, and a prolongation of one of the flaps sufficient in length to overlap and form a pasted seam with the other flap.

No. 32,076. Anvil Shears for Cutting Metal.

(*Cisailles d'enclume pour tailler le métal.*)

William H. Adams and Ulysses S. Verdun, Franklin, La., U.S., 12th August, 1889; 5 years.

Claim.—1st. Shears for cutting metal, having a stationary cutter-bar, one end of said bar being extended to form an arm at an obtuse angle to the cutter, said arm having an adjustable guide-bar pivoted to its side, and a lever to its end, the other end of the bar having a movable cutter pivoted thereto, and a link connecting the other end of the movable cutter and the lever, as set forth. 2nd. The combination, with a stationary cutter-bar having a pin in its centre adapted to be held in an anvil, of an arm extending at an obtuse angle downward from the end of the bar, a lever pivoted to the end of the arm and an adjustable guide-bar secured to the side of the arm and bent outward and extending parallel thereto, the opposite end of the stationary cutter bar bent upon itself, forming a pivotal bearing for one end of the movable cutter-bar, the opposite end of the movable cutter connected to the lever by a link, as set forth.

No. 32,077. Fork Blank. (*Ebauche de fourcher.*)

William Chaplin, Saint Catharines, Ont. (assignee of Frank Silliman, Jr., Springfield, Mass., and Warren H. Cowdery, Ashtabula, Ohio, U.S.), 12th August, 1889; 5 years.

Claim.—1st. A fork blank, having a tine portion and a tang portion formed in substantially parallel lines, and having two other tine portions formed in substantially parallel lines with each other and projecting from the blank head in an opposite direction from said first two portions, said two other tine portions being separated from each other throughout their entire length, a distance substantially equal in width to the width of the tang portion, substantially as set forth. 2nd. A fork blank, having an outer tine portion and an inner tine portion formed parallel, and having an outer tine portion and a tang portion formed parallel, but projecting in an opposite direction from the first two portions, substantially as set forth.

No. 32,078. Perforated Plate for Drying Steam. (*Plaque perforée pour sécher la vapeur.*)

Edward S. T. Kennedy, New York, N.Y. (assignee of William Houghaling, Bridgeport, Conn.), U.S., 12th August, 1889; 5 years.

Claim.—1st. In a radial tube steam boiler, the combination with a steam drying tube extending into the fire box, of a removable perforated plate applied to the tube for spraying any water which may be thrown against the mouth of the tube, and thereby producing dry steam. 2nd. In combination with the steam tube of a boiler and its internal drying pipe, a perforated plate applied to the mouth of the tube and supporting centrally the internal pipe, for the purpose described. 3rd. In combination with the steam tube of a boiler, a perforated plate provided with inwardly projecting lugs for supporting it in the mouth of the tube, as described. 4th. In combination with a steam tube and its internal pipe, a perforated plate having inwardly projecting lugs to support it in the tube, and a large central opening

for the passage of the internal pipe, as described. 5th. In combination with a steam tube and its internal pipe, a perforated plate having inwardly projecting lugs, a boss or collar provided with a large opening, and means for securing the collar to the internal pipe, all for the purpose described.

No. 32,079. Construction of Saddle Frames.

(Construction des bois de selles.)

Franz Gross, Metz, Alsace Lorraine, 14th August, 1889; 5 years.

Claim.—1st. A saddle frame, made of steel plate, wood, or other suitable material, the side plates of which in their outward and lengthwise direction correspond to the curve and arch of the horse's back, and are in connection with the front arched part serving to connect the two side plates and hold them in place, being riveted to both of them, and provided with a buckle, loop, or slotted plate for the stirrup leather, and the seat formed of sheet steel and provided with curved bands or plates for strengthening purposes, and with a curved arched back connecting band or plate, and with screws or slits for fastening the girths, substantially as and for the purposes set forth. 2nd. A saddle frame for military purposes, provided with an arched back, connecting band or plate serving to place and fix the rider's cloak upon, substantially as set forth. 3rd. A saddle frame, arranged for the use of ladies, having no front plate and connecting plate, as hereinbefore described for military purposes, but, in their place, two straps or bands to hold the side plates in their proper position to one another, of which one is rivetted under the two horns, and the other just short of the ends of the two side plates in connection with the horn or support for a ladies leg, and the second adjustable horn, substantially as and for the purposes set forth.

No. 32,080. Bureau and Similar Articles of Manufacture.

(Commode et articles similaires de fabrique.)

Charles W. Katherman and Reuben Folk, Williamsport, Penn., U.S., 14th August, 1889; 5 years.

Claim.—1st. The combination, with a bureau case, or frame, of the inside spring-actuated and automatically adjustable drawer supports, substantially as and for the purpose set forth. 2nd. The combination of the bureau, case or frame, having recesses E and F, the movable frames D, supported in said recesses or bearings, and the springs, substantially as and for the purposes set forth. 3rd. The movable drawer supports D, having lateral tongues D', in combination with the recessed corner pieces of the bureau, and the springs inserted into said recesses, substantially as and for the purpose set forth.

No. 32,081. Railway Frog Guard.

(Garde-rail de croisement de chemin de fer)

Alfred G. Campbell, Sherbrooke, Que., 14th August, 1889; 5 years.

Claim.—1st. As a new article of manufacture, the guard B, having the bosses *d* and *e*, and means, as bolt *c*, for fastening said guard to the rail, substantially as and for the purpose hereinbefore set forth. 2nd. The railway frog guard B, having its upper edge thin, as shown, and having means, as the bosses *d* and *e*, to adapt it to the size and shape of the rail A, substantially as shown and described. 3rd. The guard B, having its lower portion corrugated, as shown, in combination with means, as bolt *c*, for fastening said guard to the rail A, substantially as and for the purpose hereinbefore set forth. 4th. The combination, in a railway frog guard, of the guard B having its lower portion corrugated and grooved, as shown, with the bolt *c* and rail A, substantially as and for the purpose hereinbefore set forth. 5th. The guard B, provided with bosses *d* and *e*, and having its lower portion grooved and corrugated, as shown, in combination with means, as bolt *c*, for fastening said guard to the rail A, substantially as and for the purpose hereinbefore set forth.

No. 32,082. Snow Shovel.

(Pelle à neige.)

John R. McLaren, Jr., Montreal, Que., 14th August, 1889; 5 years.

Claim.—In a shovel, the combination, with the blade A, of the handle B, rib C, stay D, and clinching rivet E, and fastenings, all substantially as herein shown and described.

No. 32,083. Thill Coupling.

(Arçon de limonière.)

Walter T. Ross, Quebec, Que., 14th August, 1889; 5 years.

Claim.—In a thill coupling, having movable jaws 5, 6, hinged together at therear end by one leg of a clip 2, and supported by a plate 7, the inwardly facing coniform projection 10 of said jaws, the thill iron 3 having a bore conically enlarged at both ends to coincide with said projections, and a bolt 3 coupling the thill iron and jaws together, substantially as set forth.

No. 32,084. Valve Gear for Engines.

(Mécanisme de soupape de machine.)

John Grime, Minneapolis, Minn., U.S., 14th August, 1889; 5 years.

Claim.—1st. In a valve gear, the combination, with an eccentric, of an eccentric strap provided with an extended arm, a guide for the outer end of said arm, and straining it to move in a definite path, a rocker provided with a pair of rigid arms, a valve rod connected to one of said arms at or about right angles when the valve is in mid-position, and an eccentric rod having one end attached to the said arm of said eccentric strap, and the other end attached to the other rod or arm, substantially as and for the purposes set forth. 2nd. In a valve gear, the combination, with an eccentric strap having an extended arm, of a guide for the outer end of said arm pivoted at a point offset from its longitudinal axis, and an eccentric rod for driv-

ing the valve attached to said arm, substantially as and for the purposes set forth. 3rd. In a valve gear, the combination, with an eccentric strap having an extended arm, a guide for the outer end of said arm, having its pivoted point eccentric or offset, a rock shaft provided with a pair of rocker arms, a valve rod attached at or about right angles to one of said rocker arms when the valve is at mid-position, and an eccentric rod having one end attached to the other rocker arm, and its other end attached to the extended arm of the eccentric strap, substantially as and for the purposes set forth. 4th. In a locomotive, an automatically adjustable support for the point of suspension of a valve gear, consisting of a standard boxed on the main driving axle, in combination with a radius bar attached at one end to said standard, and at the other to a part of the main frame, as and for the purpose set forth. 5th. In a valve gear for locomotives, in combination with an eccentric on the main driving axle, and an eccentric strap provided with an extended arm, a standard boxed on said axle, a reverse shaft journaled in said standard and carrying a guide for the outer end of said arm, a rocker mounted on the main frame for communicating motion to the valve, an eccentric arm from said arm to said rocker, and a radius bar attached to said standard, and to the main frame and parallel with said eccentric rod when the same is in its mean position, substantially as and for the purposes set forth. 6th. In a locomotive, a valve gear comprising in combination, an eccentric arranged upon the main driving axle, an eccentric strap having an extended arm, a rocker for communicating motion to the valve, an eccentric rod connecting said rocker and said eccentric strap arm, a standard boxed on said axle, a radius bar connecting said standard with the main frame and arranged substantially parallel with said eccentric rod when in its mid-position, a reverse shaft journaled in said standard and carrying a guide for said eccentric strap, and mechanism for reversing the position of said shaft connected to the reversing lever in the engineer's cab, substantially as and for the purposes set forth. 7th. In a valve gear having an eccentric strap, with an extended arm connected by an eccentric rod with a rocker driving the valve, of a standard boxed on the axle and adjacent to said eccentric strap arm, a reverse shaft journaled in said standard and carrying a guide for said eccentric strap arm, a segmental circumferential groove arranged in said reverse shaft, and a set-screw in said standard engaging said groove and limiting the throw of said shaft, and adapted to secure said shaft in a fixed position substantially as described. 8th. In a device of the class described, a reverse shaft carrying guides for the eccentric strap arms on either side of the engine journaled in suitable standards upon the main driving axle, composed of two substantially equal members detachably secured together end to end, set-screws arranged in said standard and entering circumferential grooves in said shaft, whereby the throw of said shaft may be limited or secured in any desired fixed position, substantially as and for the purposes set forth.

No. 32,085. Car Coupler.

(Attelage de chars.)

Cyrus W. Courtney, Bliss, I.T., U.S., 14th August, 1889; 5 years.

Claim.—The combination, with the draw-head, the coupling pin having an opening therethrough near its lower end, the spring actuated slide engaging said opening, and the casting H connected with said slide, of a spring actuated slide within the draw head adapted to engage the casting H and move the same backward to release the slide connected with said casting from its engagement with the coupling pin, substantially as shown and described and for the purpose specified.

No. 32,086. Dust Catcher.

(Arrête-poussière.)

Charles M. Hardenburg, Minneapolis, Minn., U.S., 14th August, 1889; 5 years.

Claim.—1st. A dust collector comprising an annular expansion chamber, a separating chamber arranged below the said expansion chamber, a series of inclined passages leading from the bottom of said expansion chamber to the top of said separating chamber, and a radial inlet-spout connected with said expansion chamber, substantially as described. 2nd. The combination, in a dust collector, of a separating chamber provided in one end with a discharge opening for the purified air, and at its opposite end with a discharge opening for the separated dust, an annular chamber arranged over said separating chamber, a series of inclined passages leading from the bottom of said annular chamber to the top of said separating chamber, and a radial air inlet spout connected with said annular chamber, substantially as described. 3rd. The combination, in a dust collector, of a circular separating chamber, a circular casing 4 connected with the top of said chamber, a tube 9 arranged within said casing 4, with an annular space between said tube 9 and said casing 4, a series of inclined deflectors 13 arranged between said tube 9 and casing 4, and dividing said space into a series of inclined passages, all communicating with the top of said separating chamber, and a radial air inlet spout communicating with all of said passages, substantially as described.

No. 32,087. Whistle Actuating Mechanism.

(Mécanisme actionnant les sifflets.)

William Rymer, Detroit, Mich., U.S., 14th August, 1889; 5 years.

Claim.—1st. The combination, with the whistle I, of the lever I₂, lever G₄, cam M, rotary mechanism K, supply pipe F, valve *f*, and tripping bar, substantially as set forth. 2nd. The combination, with the whistle I, of the lever I₂, lever G₄, toothed cam M, rotary mechanism K, pinion L, supply pipe F, valve *f*, and tripping bar, substantially as set forth. 3rd. The combination, with the whistle I, of the lever I₂, lever G₄, cam M, rotary mechanism K, supply pipe F, valve *f*, bar E, bell crank D₁, and bar D, substantially as set forth. 4th. The combination, with the whistle I, of the lever I₂, lever G₄, cam M, locking disk M₁, arm E₂, rotary mechanism K, supply pipe F, valve *f*, and tripping bar, substantially as set forth.

No. 32,088. System and Apparatus for Heating Railway Trains. (*Mode et appareil de chauffage des trains de chemins de fer.*)

Robert Wilson, Pittsburgh, Penn., U.S., 14th August, 1889; 15 years.

Claim.—1st. In a car-heating apparatus, the combination, with a main water-heating device mounted on the locomotive-boiler, and within the same, of a water-circulating system consisting of direct and return pipes mounted on a car and arranged and adapted to heat the car by direct radiation, and connected directly to said heating device, and a local or supplementary heating circuit comprising a water-tank, stove and coil mounted on the car, said coil being connected to the main system by pipes having cocks, whereby the car may be heated independently from the heat derived from the locomotive-boiler, substantially as described. 2nd. In a car-heating apparatus, the combination, with a main water heating and circulating system comprising a water-heating device mounted on a locomotive, and the boiler thereof, and the delivery and return pipes connected directly thereto and passing through a car, of a supplementary or local heating and supply circuit mounted on the car and connected to said main system, substantially as described. 3rd. In a car-heating apparatus, the combination of a water-heating and supplying device consisting of a steam pump and coil, said coil being located within the steam space of the locomotive boiler and connected to said pump, of delivery and return pipes connected with said coil and passing through the car to be heated, and a stove and supplemental coil carried on the car, said coil being connected to the service pipes by branch pipes having suitable cocks, whereby said car may be heated independently of the locomotive, substantially as described. 4th. In a car-heating apparatus, the combination of a steam boiler carried upon one of the vehicles of the train, a main water heater contained in a vessel communicating with said boiler and carried on the same vehicle direct, and return pipes connected to said main heater and traversing the other vehicles of the train, and a supplementary heating circuit consisting of a coil, and heater on each car connected to said direct and return pipes by branch pipes having cocks, substantially as described.

No. 32,089. Land Roller. (*Rouleau d'agriculture.*)

John Riebold, Troy, Ill., U.S., 14th August, 1889; 5 years.

Claim.—1st. The combination of the main frame, the curved slotted plate secured thereto, the roller arranged under the main frame, the frame surrounding the said roller, and the headed stud or pin on said frame engaging the slotted plate, as set forth. 2nd. The combination of the main frame, the curved slotted plate secured thereto, the roller, the frame inclosing the said roller, the headed stud or pin thereon engaging the slotted plate, the tongue pivoted to said frame, and the draft bars having their front ends pivoted to the said frame, and their rear ends pivoted to the main frame, as set forth. 3rd. The combination of the main frame, the curved slotted plate secured thereto, the cross-bar having a stud engaging said plate, the hangers depending from said cross-bar and having journal boxes at their lower ends, the roller having its axle journaled in said boxes, and the crossed draft-bars connected to the boxes and the main frame, as set forth. 4th. The combination of the main frame, the front roller carried thereby and adapted to be moved transversely of the same, and the crossed draft-bars between said roller and the frame, as set forth.

No. 32,090. Fish-Joint and Fish-Joint Chair for Railway and Tramway Rails. (*Eclisse et coussinet d'eclisse pour les rails de chemins de fer et de tramways.*)

Frederick C. Winby, Brighton, Eng., 14th August, 1889; 5 years.

Claim.—The combination, with either a double-headed or a vignoles or flanged rail, of the fish-plates A supported in chairs B from one sleeper to another, to form flexible bridges or girders supporting the ends of the rails from sleeper to sleeper, in the manner, by the means, and for the purposes herein set forth.

No. 32,091. Foot Guard for Frogs, Switches, etc. (*Garde-pied pour les rails de croisement, les aiguilles, etc.*)

Charles H. Wakefield, Sherbrooke, Qué., 14th August, 1889; 5 years.

Claim.—1st. The herein-described foot-guard for railway frogs, switches, etc., consisting of a straight-faced or V-shaped tapering bar, having the larger end turned down and formed to adapt it to be driven into the tie, in combination with a spike driven into a tie to support the small end of said bar, substantially as described. 2nd. The herein-described foot-guard for railway frogs, switches, etc., consisting of a straight-faced or V-shaped tapering bar, having its larger end turned down and formed to be driven into the tie, a shoulder on said turned-down end to limit its entrance into the tie, in combination with a spike for supporting the smaller end, substantially as described.

No. 32,092. Car Heating Apparatus.

(*Appareil de chauffage des chars.*)

James H. Sewall, Portland, Me., U.S., 14th August, 1889; 5 years.

Claim.—1st. The valve case *a*, having a main passage *a* through it, the passages *c*, *c*1, and the three-way cock *d*, in combination with the main steam pipe *b*, and circulating pipes *e*, *e*2, *e*3, substantially as and for the purpose set forth. 2nd. The valve case *a* having the main steam passage through it, a valve *d* controlling said passage, and an independent passage *e*5 in proximity to the main steam passage, in combination with the main steam pipe, and circulation pipes, substantially as described for the purpose set forth. 3rd. The valve

case having the main steam passage through it, a valve controlling said passage, the independent passage *e*5, and the valve *e*9, in combination with the main steam and circulation pipes, as set forth for the purpose described. 4th. The valve case having the main passage through it, the independent passage *e*5, and the outlet passage *e*6 provided with a steam trap, in combination with the main steam pipe and circulating pipes, as set forth. 5th. The valve case having the main steam passage through it, the passages *c*, *c*1, and the valve *f*, in combination with the main steam and circulating pipes, substantially as described. 6th. In a car-heating system, a main steam pipe, circulation pipes in the car, and means for controlling the supply of steam to the circulation pipes, combined with portions of the return pipes, or terminating portion of the circulation pipes in metallic contact or connection, with, or located closely adjacent to, the main steam pipe to derive warmth therefrom and prevent freezing of the water of condensation, substantially as described. 7th. In a car-heating system, a main steam pipe, circulation pipes in the car, and means for controlling the supply of steam to the circulating pipes, combined with a chambered portion or portions in metallic contact or connection with, or located closely adjacent to, the main steam pipe for the passage of the water of condensation, substantially as described.

No. 32,093. Heater. (*Calorifère.*)

Edward Gurney, Toronto, Ont., 14th August, 1889; 5 years.

Claim.—1st. The combination, with a hot-water heater, of a steam pipe leading from an independent heater to the interior of the hot-water heater, whereby the steam in the pipe may be utilized for the purpose of heating the water by contact with said pipe. 2nd. A hot-water heater provided with an ordinary fire-pot, and consisting of a series of water-compartments having their water-spaces all connected together, in combination with pipes arranged within the water-spaces, substantially as described, whereby the steam may be introduced into the pipes and pass through the water while in said pipes for the purpose of heating the water by contact with said pipes, as set forth.

No. 32,094. Water Heater. (*Calorifère à eau.*)

Thomas G. G. Mount and Lee Burt, Detroit, Mich., U.S., 14th August, 1889; 5 years.

Claim.—1st. In a water heater, the combination of a section C spanning the combustion chamber, a water chamber located over said section and communicating therewith, said chamber provided with a series of drop tubes, substantially as described. 2nd. In a water heater, the combination of a series of cross sections spanning the combustion chamber, pipes leading from the middle of each section, and communicating with a water chamber, said water chamber provided with drop tubes, substantially as described. 3rd. In a water heater, the combination, with an individual section C extending across the combustion chamber, of an individual water chamber provided with outlets to the line pipes, and communicating with said section intermediate the extremities of said section, said section and communicating chamber independently removable from the heater, substantially as described. 4th. In a water heater, the combination, with an individual section C extending across the combustion chamber, of an individual water chamber provided with drop tubes, and outlets to the line pipes and communicating with said section intermediate the extremities of the sections, said section and communicating chamber independently removable from the heater, substantially as described. 5th. In a water heater, the combination, with an individual section C extending across the fuel bed, of an individual water chamber communicating therewith, the one provided with flanges to deflect the products of combustion, the other open at its sides to allow the passage of the products of combustion, substantially as described. 6th. In a water heater, the combination, with a series of individual sections C, of a series of individual water chambers, each communicating with a corresponding section, each section with its chamber separable from the remaining sections and chambers of the series, substantially as described. 7th. In a water heater, the combination, with a series of individual sections C extending across the combustion chamber of a series of individual water chambers, each communicating independently with a corresponding section, said chambers provided with drop tubes, and outlet pipes leading from the extremities of said chambers, substantially as described. 8th. In a water heater, the combination, with a series of individual sections C, of a series of individual water chambers, each communicating respectively with a corresponding section, outlet pipes leading from said chambers, each chamber connective with separate circuits, substantially as described. 9th. In a water heater, a series of cross sections C spanning the combustion chamber, each of said sections separately communicating with a water chamber, the communication leading from the middle of the section, substantially as described.

No. 32,095. Expansion Pulley.

(*Poulie à diamètre variable.*)

Ernest F. Anternieth, New York, N. Y., U. S., 14th August, 1889; 5 years.

Claim.—1st. The combination, with a fixed hub or centre piece having a series of guides rigidly attached thereto and projecting tangentially therefrom, of a series of segment pieces for forming portions of the periphery of a pulley, and fitted to said guides, a hub or collar concentric with and movable toward and from said fixed hub, and a series of rods connected with said segment pieces, and said movable hub, to move in planes tangential to a circle concentric with said hubs, substantially as herein specified. 2nd. The combination, with a face plate, and a series of tangentially arranged guides formed thereon, and a series of segment pieces fitted to slide along said guides, of a shaft upon which said face plate is secured, a hub or collar fitted to turn with and slide upon said shaft toward and from said plate, and a series of rods pivotally connected with said segment pieces, and said movable hub or collar to move in planes tangential to a circle concentric with said hub and shaft, substantially as herein specified.

No. 32,096. Horizontal Steam Engine.*(Machine à vapeur horizontale.)*

John Guy, Sherbrooke, Qué., 14th August, 1889; 5 years.

Claim.—1st. The construction of engine frame or bed, in combination with guides, making guides more rigid and self-lubricating, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of cross-head, with wedge, screw and shoe, substantially as and for the purpose hereinbefore set forth. 3rd. The combination of double discs, with sleeves, simplicity of construction, large wearing surface, also favoring a long life existence for said engine, substantially as and for the purpose hereinbefore set forth.

No. 32,097. Thermostat. (Thermostat.)

Harvey Cortland, Toronto, Ont., 14th August, 1889; 5 years.

Claim.—1st. The combination, with the annular case 1, of the concavo-convex diaphragm 10, provided with a screw 16, to bear on the concavity of the diaphragm at the centre, connection wire 15, binding post 4, contact post or screw 17 and binding post 5, substantially as set forth. 2nd. A thermostat comprising, a shell 18, an annular case 1, a concavo-convex diaphragm 10, spring tongue 11 insulated from the case and having a bearing 15 on the centre of the diaphragm, an insulated binding post 2 connected to said tongue by an insulated wire 15, an adjusting screw or contact post 17, and a binding post 4 in connection with said case, whereby the free end of the tongue contacts with post 17 when the diaphragm is expanded by atmospheric influence to pass the electric current from one binding post to the other, substantially as set forth. 3rd. The contact post 17 having an insulated portion c, in combination with tongue 11 having frictional connection.

No. 32,098. Composition, Preparation and Manufacture of Carbonated Beverages. (Composition, préparation et fabrication des boissons carbonatées.)

George C. Henry, Burlington, Iowa, U.S., 17th August, 1889; 5 years.

Claim.—1st. The process of preparing and making healthful and nutritious carbonated beverages, by separately charging in separate and distinct tanks or fountains respectively, with carbonic acid gas, plain water, and enriching fluid (with or without flavors) or syrups drawing the same separately into an open vessel, and by mixing and combining them to form a foamy, creamy beverage of more or less consistency, and capable of retaining the foamy, frothy state for an appreciable time for its use, as described. 2nd. The process of making and preparing healthful and nutritious carbonated beverages, by separately charging in separate and distinct tanks or fountains respectively, with carbonic acid gas in one, the plain water, and in the other an enriching fluid consisting of the following composition, viz.: For a ten (10) gallon fountain—1. One-half (½) pint infusion or tincture of sarsaparilla root (or its equivalents) for the purpose indicated may be employed which consists of a, one-half (½) pint infusion or tincture of the bark of root of Quillaya b, one-half (½) pound of Dextrine dissolved in one (1) gallon water. 2. One (1) gallon of the solution of gelatine (composed of six (6) ounces of gelatine to one (1) gallon of water). 3. Syrup with or without flavor. 4. Water sufficient to properly fill the tank or retort leaving sufficient space to agitate the mixture thoroughly. 5. Carbonic acid gas in such quantity and proportion as the amount of liquid specified will absorb under the usual pressure commonly employed in charging carbonated liquids. 3rd. As an article of manufacture or beverage, a liquid and foamy material in the form and state of whipped cream, composed of any suitable enriching fluid or material charged with carbonic acid gas, and carbonated water thoroughly mixed and combined with or without syrup or flavors, as described. 4th. As an article of manufacture, a liquid or beverage in a frothy state or condition, composed of plain carbonated water thoroughly mixed and combined with an enriching material composed as follows: For a ten (10) gallon fountain or tank—1. One-half (½) pint infusion or tincture of sarsaparilla root (or its equivalents for the purpose indicated) may be employed which consist of a. One-half (½) pint infusion or tincture of the bark of root of Quillaya b. One-half (½) pound of Dextrine dissolved in one (1) gallon of water. 2. One (1) gallon—the solution of gelatine (composed of six (6) ounces of gelatine to one (1) gallon of water). 3. Syrup with or without flavors. 4. Water sufficient to properly fill the tank or retort leaving sufficient space to agitate the mixture thoroughly. 5. Carbonic acid gas in such quantity and proportion as the amount of liquid specified will absorb under the usual pressure commonly employed in charging carbonated liquids. 5th. The compound hereinbefore described as an enriching material, composed of an infusion or tincture of sarsaparilla (or its equivalents), a solution of gelatine, syrup, water, and carbonic acid gas in the quantities and proportion stated.

No. 32,099. Rule. (Règle.)

Johann K. F. Knade, Breslau, Germany, 17th August, 1889; 5 years.

Claim.—1st. Flat rulers having inserted in one or both edges a double and furrowed strip of metal, substantially as described. 2nd. Flat rulers having inserted in one or both edges a doubled and furrowed strip of metal, the latter being lined at its entire length with a strip of cloth or other hygroscopic material for the purpose of absorbing the overflow ink, substantially as described.

No. 32,100. Alarm System. (Système d'alarme.)

Charles A. Cox and Joseph F. Cox, Louisville, Ky., U.S., 17th August, 1889; 5 years.

Claim.—1st. The combination in an automatic circuit-closing device, of a hinged door or frame conjointly provided with the following elements: a time-piece having a contact-arm located at the rear of said door, and adapted for circuit-connection and rotating corres-

pondent with an hour-hand, rear contact plates g, portion c having contacts connected with plates g, portion d having alarm circuit-contacts and coupling devices to connect the contacts of portions c, d, substantially as set forth. 2nd. The combination, in an automatic circuit-closing device, of a time-piece, two series of contacts respectively corresponding with divisions of time and alarms, an electro-magnet having a circuit-closing armature, alarm-circuit controlled by said armature and a bell directly included therein, couplers to close the primary circuit through any desired magnet or magnets, an arm actuated by the time-piece and adapted for primary circuit-connections, and a series of plates connected to said time-contacts, substantially as set forth. 3rd. The combination, in an automatic circuit-closing device, of a hinged door or frame, a time-piece carried thereby, contact-arm f, and plates g, portion c having contacts connected with said plates, portion d having contacts e, an electro-magnet for each pair of contacts l, an armature for each electro-magnet controlling the room circuit-connections, and coupling devices for connecting the contacts of portions c, d, substantially as set forth. 4th. The combination, in an automatic circuit-closing device, of a time-piece carried thereby, contact-arm f, and plates g, portion c having contacts connected with said plates, portion d having contacts e, electro-magnets connected to the latter, and each having an armature, and alarm circuit-connections controlled by said armatures, and including metallic strips N, N1, arranged as and for the purpose specified. 5th. The combination, with an electro-magnet, of a clamp or collar secured thereto and having ears, a vertical armature pivoted in said ears, a malleable metal extension depending from said armature below its pivotal connection, and a weight permanently secured to said extension, substantially as set forth. 6th. The combination, in an automatic circuit-closing device, of a time-piece, two series of contacts respectively corresponding with divisions of time, and alarms, an electro-magnet having a circuit-closing armature and adapted to control an alarm-circuit, couplers to close the primary circuit through any desired magnet or magnets, an arm actuated by the time-piece and adapted for primary circuit-connections, a series of plates connected to said time contacts, and a shunt-circuit, and circuit-closing device included therein to complete an alarm-circuit independent of the time-piece, substantially as set forth.

No. 32,101. Combined Wood and Paper Veneer. (Pluage en bois et papier combinés.)

Hugh Silver, Lindsay, Ont., 17th August, 1889; 5 years.

Claim.—1st. A veneer composed of strips of wood laid side by side, and secured to a ground or backing of paper or analogous material, substantially as herein described. 2nd. A veneer composed of a sheet of cloth or paper, having secured to it a continuous covering of strips of wood, said strips having thin edges bevelled, substantially as herein shown and described.

No. 32,102. Paddle Wheel. (Roue à aubes.)

Robert J. Jones, Carrollton, W.T., U.S., 17th August, 1889; 5 years.

Claim.—1st. In a paddle-wheel, the combination, with the arms, of the wheel and buckets pivoted therein, of an annular band of less diameter than said wheel, having a crank connection with said paddles, a plate attached to the vessel having an eccentric groove, pins adapted to slide in said grooves, and a crank connection between said pin and band, substantially as shown and described. 2nd. In a paddle-wheel, the combination, with the arms of the wheel, the buckets pivoted therein, and an annular band having a crank connection with said buckets, of a plate attached to the vessel's side, having an eccentric groove in its face, a plate adapted to slide in the arms of said wheel, carrying pins adapted to enter the said eccentric groove, and a pivoted connection between said plate and annular band, substantially as shown and described. 3rd. In a paddle wheel, the combination, with the grooved arms, of the wheel and a plate having an eccentric groove, and attached to the side of a vessel, of an annular band of less diameter than the wheel, buckets pivoted between the arms, and each provided with a crank arm connected to the annular band, a plate sliding in the grooves of the arms, and provided with pins working in the eccentric groove of the said plate, and a rod connecting the sliding plate with the cranks of the buckets, substantially as herein shown and described. 4th. The combination, with the arms D, of a paddle-wheel provided with a longitudinal groove g at their inner ends, buckets E pivoted near the outer ends of said arms, crank-arms d attached to the inner pivots of said buckets, an annular band F, of less diameter than the wheel pivotally attached to said crank-arms, a plate g1 sliding in said grooves g, united at one end with said band by a connecting-rod dt, and having a pin f upon the other end of a plate A attached to the vessel's side, provided with groove b1 eccentric with the axis of said wheel, said groove adapted to receive the pin h of the plates g, substantially as shown and described and for the purpose herein set forth.

No. 32,103. Ore Concentrator.*(Concentrateur de minerai.)*

Frank B. Morse, Murphy's, Cal., U.S., 17th August, 1889; 5 years.

Claim.—1st. In a concentrator, an endless travelling belt mounted at an inclination, and having its working surface composed of the series of short transverse upwardly-inclined vanning surfaces a, and the downwardly inclined surfaces at connecting them, substantially as described. 2nd. In an ore concentrator, the combination of a supporting frame, an endless travelling belt mounted at an inclination therein, and having its working surface composed of the series of short transverse vanning surfaces a, elevated or inclined from the horizontal, and the downwardly inclined surfaces at connecting them, and means, substantially as described, for vibrating said belt. 3rd. In an ore concentrator, an endless travelling belt mounted at an inclination and having an undulated working surface, in combination with a crank, or its equivalent, whereby a gentle and regular shaking motion, substantially in a horizontal plane, is imparted to the belt, substantially as described.

No. 32,104. Hydro Carbon Burner.*(Foyer à hydrocarbures.)*

Frank B. Meyers, Fort Plain, N. Y., U. S., 17th August, 1889; 5 years.

Claim.—1st. A hydro-carbon burner, comprising a casing, having an air inlet pipe, a burner proper comprising a tube, connected at its inner end with said casing, and having a bell-shaped mouth and an oil pipe passing through the inner end of said casing into the said tube, and carrying at its forward end a tubular series of rods extending to the juncture of the bell-shaped mouth with outer end of the tube, substantially as shown and described. 2nd. A hydro-carbon burner, comprising a casing, having an air inlet pipe, a burner proper comprising a tube connected at its inner end with said casing, and having a bell-shaped mouth, an oil pipe passing through the said casing into the rear end of said tube, and carrying a tubular series of rods extending to the outer end of the tube at its junction with the flaring mouth, and an air-supply regulator held in the said casing, substantially as shown and described. 3rd. In a hydro-carbon burner, the combination with a burner proper, comprising a tube, having a bell-shaped mouth, of an oil pipe extending into the inner end of said tube, and provided with a tubular flaring series of rods, extending along the inside of the tube to its outer end at the junction of said bell-shaped mouth, and serving to carry the oil to be atomized, substantially as shown and described. 4th. In a hydro-carbon burner, the combination, with the burner tube, connected with an air supply, of an oil-pipe extending into the inner end of said burner tube, and rods secured around the inner end of the said oil-pipe, and extending forwardly at an incline along the said tube to the inner end of the bell-shaped mouth, substantially as shown and described. 5th. In a hydro-carbon burner, the combination, with an oil-pipe, closed at its discharge end, and provided near the same on the top with an opening of rods secured on the discharge end of the said oil-pipe, and projecting from the same and serving to carry the oil discharged through the said pipe-opening, substantially as shown and described. 6th. In a hydro-carbon burner, the combination, with a casing, having an air inlet pipe, of a burner proper, comprising a tube secured at one end to the said casing, and carrying at its other end a bell-shaped mouth, an oil-pipe passing through the inner end of said casing into the said burner tube, and rods secured in a tubular series to the said oil-pipe and extending along the said burner tube to the inner end of the bell-shaped mouth, and receiving the oil from the said oil-pipe, substantially as shown and described. 7th. In a hydro-carbon burner, the combination, with a casing having an air-inlet pipe, of a burner proper comprising a tube, secured at one end to the said casing, and carrying at its other end a bell-shaped mouth, an oil-pipe passing through the said casing into the inner end of said burner tube, rods secured in a tubular flaring series to the said oil-pipe, and extending along the said burner tube to the inner end of the flaring mouth, and receiving the oil from the said oil-pipe, and an air-regulator held adjustably in the said casing, substantially as shown and described. 8th. In a hydro-carbon burner, the combination, with a casing connected with an air-supply pipe, of a block of fire-proof material fitted into the open end of the said casing, and provided with a conical aperture, a tube discharging into the said conical aperture and opening into the air chamber of the said casing, an oil-pipe extending into the said casing and into the said tube, and provided with an outlet opening, and a series of tubular rods held in the said oil-pipe, and extending to the inner end of the said tube, substantially as shown and described. 9th. In a hydro-carbon burner, the combination, with a casing connected with an air-supply pipe, of a block of fire-proof material fitted into the open end of the said casing, and provided with a conical aperture, a tube discharging into the said conical aperture and opening into the air chamber of the said casing, an oil-pipe extending into the said casing and into the said tube, and provided with an outlet opening, a series of tubular rods held in the said oil-pipe and extending to the inner end of the said tube, and a plate secured on the said oil-pipe and screwing on the end of the said casing to support the said oil-pipe, substantially as shown and described. 10th. In a hydro-carbon burner, the combination, with the casing B provided with the apertured partition F, and having an air chamber B₂ connected with an air supply, of the block E made of fire-proof material, fitting into the open end of the casing and provided with a conical aperture G, the tube H held in the said block E, and opening into the said conical aperture G, the oil-pipe K provided with the opening K₁ and the series of tubular rods J held on the closed ends of the said oil-pipe K, and extending in the tube H, substantially as shown and described. 11th. In a hydro-carbon burner, the combination, with the casing B provided with the apertured partition F, and having an air chamber B₂ connected with an air supply, of the block E made of fire-proof material, fitting into the open end of the casing, and provided with a conical aperture G, the tube H held in the said block E and opening into the said conical aperture G, the oil-pipe K provided with the opening K₁, the series of tubular rods J held on the closed end of the said oil-pipe K and extending in the tube H, and a plate L secured on the said oil-pipe K and held adjustably on the end of the casing B, substantially as shown and described. 12th. In a hydro-carbon burner, the combination, with the casing B, provided with the apertured partition F, any having an air-chamber B₂ connected with an air supply of the block E, made of fire-proof material, fitting into the open end of the casing, and provided with a conical aperture G, the tube H held in the said block E and opening into the said conical aperture G, the oil-pipe K provided with the opening K₁, the air pipe Q connected with the said casing, so as to discharge into its air chamber, and a gate R held to slide on top of the said air-pipe Q, to regulate the supply of air to the said air chamber, substantially as shown and described.

No. 32,105. Bag Fastener. *(Attache-sac.)*

William H. Merritt and James Suneman, Brandon, Man., 17th August, 1889; 5 years.

Claim.—1st. The loop A, having a fixed post C, provided with a button-head or knob D, as set forth. 2nd. A bag fastener, consisting of the loop A, having a post C integral with the end bar, and the perforated step E secured to said bar, substantially as set forth.

No. 32,106. Graphophone. *(Graphophone.)*

Charles S. Tainter, Washington, D. C., U. S., 17th August, 1889; 5 years.

Claim.—1st. In a graphophone, the combination, with the tablet holder, and means for rotating and advancing the same longitudinally, of the recorder and reproducer, each pivoted on suitable supports and adapted to be turned into and out of operative position, substantially as described. 2nd. The combination of the slide, the tablet-holder mounted on a shaft having bearings in said slide, means for rotating said shaft and advancing said slide, a recorder pivoted on one side of the tablet holder, and a reproducer pivoted on the opposite side thereof, their relative positions being such that the recording and reproducing styles touch the tablet at the same point, substantially as described. 3rd. In a graphophone, the combination, with the rotatory tablet-holder, the friction wheel for driving the same, and means for advancing said tablet holder longitudinally, of a recorder pivoted to the frame, and a reproducer also pivoted to the frame, said recorder and reproducer being so disposed that when either is in operative position its style will rest on the tablet just above said friction wheel, substantially as described. 4th. In a graphophone, the combination, with the rotatory tablet holder, of the friction wheel for driving the same, and a tilting frame in which the arbor of said friction wheel is journaled, substantially as and for the purpose described. 5th. In a graphophone, the combination, with the tablet holder, and means for rotating the same, of the feed nut, the feed screw, and means for disconnecting said nut from the driving shaft and simultaneously connecting said screw therewith, substantially as described. 6th. In a graphophone, the combination of the slide, the rotatory tablet holder carried thereby, the feed-screw normally stationary, the feed nut connected to be advanced lengthwise of said screw by the rotation of said holder, and means for disconnecting said tablet-holder from the driving shaft, and connecting the feed screw therewith, so as to reverse the movement of said nut, substantially as described. 7th. The combination of the slide, the tablet-holder, the friction wheel for rotating the same, the tilting frame, in which the arbor of said friction wheel is journaled, gearing for driving the latter from the main shaft, the feed screw normally stationary, the feed nut carried by said slide and connected by gearing with said tablet-holder, and gearing for connecting said feed screw with said main shaft, when said frame is moved to disengage the tablet holder and friction wheel, substantially as described. 8th. In a graphophone, the combination of the slide, the tablet-holder carried thereby, the feed nut and feed screw, the driving mechanism and stop pins on said feed nut and screw, whereby the slide is automatically arrested at the limits of its travel, substantially as described. 9th. The combination of the slide, the rotatory tablet holder, the reproducer, the feed nut and screw mechanism for reversing the movement of said slide, the tilting frame for operating said reversing mechanism, and an arm carried by said slide and adapted to lift the reproducer from the tablet when said frame is tilted, substantially as described. 10th. The combination of the slide, the tablet-holder, the feed screw, the feed nut connected by gearing with said tablet holder, a pinion loosely mounted on said feed screw, a spring washer for effecting a frictional connection between said screw and pinion, and stop pins on said nut and screw, by engagement of which the screw and nut are connected together, substantially as described. 11th. The combination of the slide, the tablet-holder, the feed-screw supported in bearings in the frame, the feed nut connected by gearing with said tablet holder, and the locking device for holding said feed screw stationary, substantially as described. 12th. The combination of the slide, the tablet-holder, the feed screw supported in bearings, the feed nut rotated from said tablet holder, the locking device for holding said screw stationary, the tilting frame for disengaging said tablet holder from the main shaft and connecting the feed screw therewith, and an arm or projection adapted on the depression of said frame, to disengage said locking device, substantially as described. 13th. The combination of the rotatory tablet holder, the feed screw and nut for moving said tablet holder longitudinally, a tilting frame, a friction wheel on an arbor having bearings in said frame for rotating said tablet holder, and reversing gears adapted to be connected with the main shaft by said frame, all constructed and arranged as set forth, so that the frame can be tilted to disconnect said friction wheel and tablet holder without connecting said reversing gear and main shaft, substantially as described. 14th. The combination of the tablet holder, the feed nut connected by gearing with said tablet holder, the feed-screw normally stationary, the tilting frame, the friction gear for rotating said tablet holder, carried on an arbor having bearings in said frame, reversing gears adapted to connect said screw and the main shaft when said frame is tilted, a button on said frame for tilting the same, and a second button on a shank passing loosely through said frame, and having its end in close proximity to a fixed part of the apparatus, so that on pressing the latter button the frame will move only far enough to disengage the tablet holder and friction gear without connecting in the reversing mechanism, substantially as described. 15th. The combination, with the frame and recorder, of the rigid sound-conveying tube, having several bent or angular sections jointed together, constituting, in effect, a universal joint, whereby the position of a mouth-piece attached to said tube can be shifted vertically or laterally without disturbing the position of the style, substantially as described. 16th. In a graphophone, the combination, with a supporting frame and the tablet holder, recorder and operative mechanism, carried by said frame, of the base or bed-plate to which said frame is pivotally connected, so that the entire apparatus can be tipped to any angle, and means, as specified, for holding the apparatus at the angle to which it may be adjusted, substantially as described.

No. 32,107. Car Coupler. *(Attelage de chars.)*

John Skinner and Oren Stone, Flint, Mich., U. S., 17th August, 1889; 5 years.

Claim.—1st. In a car coupler, of the character described, inclined bearings formed on the under side of the coupling hook, and corresponding inclined bearings on the draw-head, arranged and adapted to open the coupling hook, substantially as described. 2nd. In a car

coupler, of the character described, the inclined bearing Q and R formed on the under side of the coupling hook, and corresponding inclined bearings S and T on the draw-head, arranged and adapted to open the coupling hook, substantially as described. 3rd. In a car coupler, of the character described, the coupling hook D, provided with the slot W adapted for pin and link coupling, and the stop or abutment X on the locking arm of the hook, substantially as described. 4th. In a car coupler, of the character described, provided with the locking latch L and gravity dog M, of the device for operating said gravity dog from the cab of the locomotive to uncouple such as the parts *f, g, h* and *i*, substantially as described. 5th. In a car coupler, the combination of a draw-head extended on its forward end upon one side to form a side support for the coupling hook, a coupling hook D pivotally mounted in said side support, and provided with a coupling arm and locking arm, a recess H in the said support to receive the locking arm of the coupling hook, a lateral off-set G on said locking arm, a transverse aperture I through the side support into which said off-set is adapted to engage a longitudinally sliding locking latch L, seated in the draw-head and provided with the gravity M to keep it normally projected, substantially as described. 6th. In a car coupling, the combination of the coupling hook D, provided with the locking arm F, extending rearwardly in the closed position of said hook, a draw-head A forming a side support in which the coupling hook is mounted, a recess H in the inner face of said side support to receive the locking arm of the coupling hook, a horizontal sliding latch L seated in the centre of the rear portion of the draw-head, and adapted to project beyond the locking arm of the coupling hook to lock the same in position, a gravity dog M engaging into said latch to keep it normally projected, and an uncoupling lever adapted to lift said gravity dog to withdraw the latch, substantially as described.

No. 32,108. Coin Operated Automatic Race Course. (*Hippodrome automatique actionné par une pièce de monnaie.*)

Clarence O. White and Marshall B. Lloyd, Minneapolis, Minn., U.S., 17th August, 1889; 5 years.

Claim.—1st. The combination in a device of the class described with a suitable shaft, of a wheel provided with suitable supporting arms and mounted upon said shaft, a clutch connecting said shaft with said wheel, and permitting the wheel or shaft to move freely in one direction, an actuating spring connected with said shaft, and a coin controlled winding and releasing device also connected with said shaft, substantially as described. 2nd. The combination, with the shaft 4, of the cup-shaped wheels 7 and 9 mounted thereon, the pawl 10 secured upon said shaft and arranged to engage said wheel, the spring 5 connected with said shaft to shaft 15, a winding and releasing mechanism connecting said shaft 15 with said shaft 4, and a coin controlled latch arranged to lock said shaft 15, and to release said shaft after the introduction of a suitable coin, substantially as described.

No. 32,109. Grain Separator. (*Séparateur des grains.*)

John R. Beynon and James B. Murphy, Watertown, Wis., U.S., 17th August, 1889; 5 years.

Claim.—1st. The combination of a pivoted valve, a rotary adjustable block arranged on the valve-pivot, and a longitudinally adjustable weight connected to the block, substantially as set forth. 2nd. The combination, with a hopper and air flue, of a casing arranged within the hopper, the inner wall of the casing provided with upper and lower openings, and the outer wall with a lower opening only, a valve pivoted in said casing, and having two surfaces of different areas and planes, and means, substantially as described, for producing a forced current in said air flue, as and for the purpose set forth. 3rd. The combination, with a chamber having an outlet opening, of a hood surrounding the same, and provided with a back-piece, a valve pivoted in the hood and having two surfaces of different areas and planes, and means, substantially as described, for inducing a forced draft against the valve, as and for the purpose set forth. 4th. The combination, with a fan and its casing, of a flue arranged in said casing, and a valve pivoted in the flue, and having its surfaces of different areas and planes, substantially as set forth. 5th. The combination, with a fan and its casing, of a flue arranged in the casing, a valve pivoted in the flue and having two surfaces of different areas and planes, and a weight adjustably connected to the valve, substantially as set forth. 6th. The combination of the receptacle A provided with the depending chamber E, and partition K, the tube H having the cap G, the adjustable disk I, the valve G, flue L, hopper M provided with the casing N, the valve O, the casing B provided with the flue P, the weighted valve Q, and the fan C, all arranged to operate substantially as and for the purpose set forth. 7th. The combination of an air flue having a side thereof provided with an opening, a fan having its casing communicating with the air passage, a pivoted valve for the opening having two surfaces of different areas and planes, whereby the suction created by the fan is normally exerted to maintain the closure of the valve, substantially as set forth.

No. 32,110. Mowing Machine. (*Machine à faucher.*)

Emerson Talcott & Company, (assignees of James H. Jones), Rockford, Ill., U.S., 17th August, 1889; 5 years.

Claim.—1st. The combination of the coupling bar 8, finger bar 5, spring 11, and link 12, substantially as set forth. 2nd. The combination of the coupling bar 8, finger bar 5, spring 11, and link 12, said link made adjustable, substantially as set forth. 3rd. The combination of the coupling bar 8, finger bar 5, support 10, spring 11, link 12, substantially as set forth. 4th. The combination of the main frame, coupling bar 8, finger bar 5, lever 14, and spring 16, substantially as set forth. 5th. The combination of the main frame, coupling bar 8, finger bar 5, spring 11, lever 14, and spring 16, substantially as set forth. 6th. The combination of the main frame, coupling bar 8, finger

bar 5, spring 11, lever 14, spring 16, hand lever 27, intermediate lever 18, link 24, and link connection 21, substantially as set forth. 7th. The combination of the main frame, hand lever 27, coupling bar 8, finger bar 5, bracket 19, intermediate lever 18, stop 29, link 23, and link connection 21, substantially as set forth. 8th. The combination of the main frame and lever 27, coupling bar 8, finger bar 5, bracket 19, intermediate lever 18, adjustable stop 29, link 23, and link connection 21, substantially as set forth. 9th. The combination of the main frame, coupling bar 8, finger bar 5, spring 11, link 12 and spring 16, substantially as set forth. 10th. The combination of the main frame, foot lever 23, coupling bar 8, finger bar 5, intermediate lever 18, link 24, link connection 21, and detent 28, substantially as set forth. 11th. The combination of the main frame, coupling bar 8, finger bar 5, intermediate lever 18, hand lever 27, foot lever 23, links 24 and 28, and link connection 21, substantially as set forth. 12th. The combination, with the main frame, coupling bar 8, finger bar 5, spring 16, foot lever 23, intermediate lever 18, link 24, and link connection 21, substantially as set forth. 13th. The combination of the main frame, coupling bar 8, finger bar 5, spring 16, foot lever 23, hand lever 27, intermediate lever 18, links 24 and 28, and link connection 21, substantially as set forth. 14th. The combination with the main frame, coupling bar 8, finger bar 5, springs 11 and 16, foot lever 23, intermediate lever 18, link 24, and link connection 21, substantially as set forth. 15th. The combination of the main frame, coupling bar 8, finger bar 5, springs 11 and 16, hand lever 27, intermediate lever 18, link 23, and link connection 21, substantially as set forth. 16th. The combination of the main frame, coupling bar 8, finger bar 5, springs 11 and 16, hand lever 27, foot lever 23, intermediate lever 18, links 24 and 28, and link connection 21, substantially as set forth. 17th. The combination of the main frame, coupling bar 8, finger bar 5, hand lever 27, foot lever 23, intermediate lever 18, links 24 and 28, and link connection 21, substantially as set forth.

No. 32,111. Egg Beater. (*Verge de cuisine.*)

William E. Perry, (assignee of James A. Perry), Yarmouth, N. S., 17th August, 1889; 5 years.

Claim.—1st. An egg beater comprising a cylindrical body having hemispherical bottom, a shaft journaled in said body, semicircular arm affixed to hubs secured to the shaft, and inclined blades in said arms, substantially as described. 2nd. In an egg beater, a cylindrical holder having a hemispherical bottom, a rotating shaft, a beater proper comprising curved arms affixed in hubs having openings for the shaft, and laterally inclined longitudinally arranged blades secured in said arms, substantially as described. 3rd. In an egg beater, the combination of a cylindrical holder having a hemispherical bottom, a horizontal rotating shaft having a handle, and three led end, longitudinally arranged semicircular arms affixed to hubs having openings for the shaft, and horizontal inclined blades secured in said arms, substantially as described. 4th. The holder A having the bottom *d*, in combination with the beater proper B, and shaft *g*, arranged substantially as described. 5th. The holder A having the bottom *d*, and cover *b*, in combination with the shaft *g* having the handle *h*, the beater proper B comprising the hubs *p*, arms *m*, and blades *q*, substantially as described. 6th. The holder A having the bottom *d*, and cover *b*, lug *x*, in combination with the shaft *g* having the threaded portion *k*, handle *h*, hubs *p*, arms *m*, and blades *q*, constructed and arranged to operate substantially as described.

No 32,112. Rail Joint. (*Joint de rail.*)

Dwight R. Atkinson, Albany, John E. Dodge, Waterford, and Jesse W. Sprong, Slingerlands, N.Y., U.S., 17th August, 1889; 5 years.

Claim.—1st. In a railway joint, a chair provided with lateral inwardly projecting flanges and bosses, placed on each side of the upper surface of the chair, provided with a lower portion square in form, and an upper portion V-shaped, substantially as described and for the purpose set forth. 2nd. In a railway joint, the combination of a triangular wedge-shaped bar, provided with a groove and notch into which is placed a key bar provided with a latch catch, with a wedge provided with a series of notches with which the latch catch engages, all substantially as described and for the purpose set forth. 3rd. In a railway joint, the combination, with a chair provided with lateral inwardly projecting flanges, of triangular wedge-shaped bars placed in contact with the foot of the rails on both sides, and also in contact with the chair flanges, and wedges in contact with the under sides of the rail heads and also in contact with said bars, substantially as described. 4th. In a railway joint, the combination, with a chair provided with lateral inwardly projecting flanges, of triangular wedge-shaped bars placed in contact with the foot of the rails on both sides, and also in contact with the chair, flanges and wedges located in contact with the rail wedge and under sides of the rail heads, and also in contact with said bars, substantially as described. 5th. In a railway joint, the combination of a chair provided with an inwardly projecting flange, and a boss projecting inward from said flange, said boss having a lower squared portion to fit recesses in the adjacent ends of the rails, and provided with an upper inwardly projecting V-shaped portion, a triangular wedge-shaped bar having a notch to fit the V-shaped portion of said boss, said bar being placed upon the foot of each rail and in contact with the chair flange, and a wedge driven in contact with the under side of the head of each rail, and also in contact with said bar, substantially as described. 6th. In a railway joint, the combination of a chair provided with lateral inwardly projecting flanges, and bosses projecting inwardly from said flanges, said bosses each having a lower squared portion and an upper inwardly projecting V-shaped portion, the rails having recessed ends to fit the squared portions of said bosses, triangular wedge-shaped bars notched to fit said bosses, and placed upon the foot of each rail on both sides and in contact with the chair, flanges and wedges driven in contact with said rails and bars on both sides, substantially as described. 7th. In a railway joint, the combination of a chair provided on both sides with inwardly projecting flanges, triangular wedge-shaped bars resting on the rail feet in contact with the chair flanges, and provided on their inner sides with key latches and wedges driven in contact with said rails, and bars on both sides of the rails, and provided with notches to engage the key latches, substantially as described.

No. 32,113. Manufacture of Tubes for Mosaic Embroidery. (*Fabrication des tubes pour la broderie mosaïque.*)

Robert A. Bonnar, (assignee of Edwin R. Morton), Winnipeg, Man. 17th August, 1889; 5 years.

Claim.—1st. In a machine for making tubes of paper and other soft and pliable material for embroidery purposes, the combination, with tension rollers or devices for supplying the material in the form of smooth and straight web, of the upper and lower rows of intermittently rotating circular cutters *c*, *c*, arranged parallel with one another in each row in pairs, at greater distances apart as regards the several pairs than the distances apart between the cutters composing each pair, substantially as and for the purpose herein set forth. 2nd. The combination, with the intermittently rotating circular cutter shafts or rods *d*, *d*, etc., the circular cutters *c*, *c* thereon, of the sleeves *e*, *e* of different widths between said cutters in pairs and between each pair of cutters, essentially as shown and described. 3rd. The combination of the intermittently rotating feed rollers *f*, *f*, the intermittently rotating circular cutter *c*, *c*, the endless cross travelling belt *h* with its attached cutters *g*, *g*, and the bearing strip or wire *k*, whereby the material under operation is first cut into separated longitudinal strips and afterwards said strips severed wide into suitable lengths, substantially as specified. 4th. The combination, with the feed rollers *f*, *f*, circular cutters *c*, *c*, and gears *g*, *g*, of the bevel wheel *d*, loose bevel wheel *h* having a driving pin *e*, the rotating flat collar *a* with its attached bolt *b*, the sliding rods *S*, *S*, with their controlling springs, the lever *u*, and the wheel *m* having a cam tooth *v*, essentially as shown and described. 5th. The combination, with the intermittently rotating cutters *c*, *c*, feed rollers *f*, *f*, and cross travelling cutter *g*, of the positively driven additional feed rollers *d*, *d*, the one of which, *d*, is of eccentric construction, substantially as and for the purpose herein set forth. 6th. In a machine for rolling paper and other like tubes, the independent and intermittently rotating case *Q*, provided with a series of split, radial mandrels *O* having independent rotatory motions upon their own axis, essentially as and for the purposes herein set forth. 7th. The combination, with the split or divided independently rotating mandrels *O*, and intermittently rotating case *Q* carrying them, of the intermittently sliding cap *s* adapted to close at intervals the outer ends of said mandrels, essentially as described. 8th. In a machine for rolling paper and other like tubes, the combination, with the intermittently rotating case *Q*, and its independently rotating split, radial mandrels *O*, and the closing cap *S*, of means substantially as described, for supplying said mandrels and entering within them detached and separated pieces of the material, whereby said pieces are rolled upon the mandrels into separate tubes having an inner diaphragm throughout their length, substantially as specified. 9th. The combination with the intermittently rotating case *Q*, and its independently rotating tube, rolling mandrels *O*, of the spring pressure clasps *A*, *A*, essentially as and for the purposes herein set forth. 10th. In a machine for rolling paper and other like tubes, the combination with the intermittently rotating case *Q*, and its independently rotating tube, rolling mandrels *O*, and devices for feeding the material in independent strips or pieces to said mandrels, of the lifting plates *a*, the mullage or cement laying brush *e*, and a mullage or cement receptacle *b*, whereby the strips or pieces of material are coated with cement to make surfaces adhere when rolled upon the mandrels, substantially as specified. 11th. In a machine for rolling paper and other like tubes, the combination with the intermittently rotating case *Q* and its independently rotating tube, rolling mandrels *O*, of the advancing and receding tube, removing chuck *N* arranged to slide in direction of each mandrel in succession as its arrives in position for delivering the tubes, and whereby the tubes are pushed off said mandrel, essentially as described. 12th. The double jaw spring chuck *N* having a pin or projection *a*, in combination with the sliding carrier or bearing *M*, and its transversely sliding base piece *O*, the spring *e*, the rails *m*, the switch rails *b*, the spring *d*, and the slide *P* with its attached screw or projection *u*, and means for forcing said slide forward and for drawing it back, substantially as specified. 13th. An organized machine for automatically making paper and other like tubes, in which are combined devices, substantially as described, for feeding a web of the material of which the tubes are to be made, for severing said web into separated longitudinal strips, for cross-cutting said strips into suitable lengths, for smearing such detached pieces of material with a cementing substance, for rolling said cemented pieces upon a mandrel, and for afterward removing the tubes so formed therefrom, as set forth.

No. 32,114. Paper Pulp Digester.

(*Pourrissoir de pâte à papier.*)

Henry W. Stebbins, Monico, Wis., U.S., 20th August, 1889; 5 years.

Claim.—1st. In a digester, the combination of the overlapping hard-metal shell sections, constructed at their upper ends with inwardly-bent annular offsets forming pockets above their overlapping contact portions, and the soft-metal lining arranged to extend over and down within said pockets, substantially as specified. 2nd. In a digester, the hard-metal shell sections *A*, *A* arranged to overlap one another, as at *b*, and each constructed at their upper ends with inwardly-bent annular offsets *c*, split or divided in the direction of their depth, as at *f*, at suitable distances apart around each section, and forming in connection with the adjacent section pockets *d*, in combination with the soft-metal lining *B*, arranged to extend over and down within said pockets, and the bolts *g* arranged to pass through the pocket portions of the overlapping shell-sections, essentially as and for the purposes herein set forth.

No. 32,115. Rein Support.

(*Porte-guides de harnais.*)

William T. Sims, Yazoo, Miss., U.S., 20th August, 1889; 5 years.

Claim.—1st. In a device for the purpose described, the combination, with a strap, having rings secured near its free ends, and pro-

vided at its longitudinal centre with means for securing the strap to the back-strap of a harness, of the cords or straps attached to the ends of the straps *C* for securing the said ends to the hip-straps of the harness, substantially as and for the purpose specified. 2nd. The combination, with the back-and-hip straps of a harness, of the strap *C* secured at its longitudinal centre to the back-strap, the rings *D* upon said strap, and the cords attached to the free ends of the strap and adapted for use in securing the said ends to the hip-straps of the harness, substantially as described.

No. 32,116. Apparatus for Shearing Sheep and other Animals, Clipping Horses and the like. (*Appareil pour tondre les moutons, les chevaux et autre animaux et autre choses.*)

Frederick Y. Wolseley, Sydney, N.S.W., 20th August, 1889; 5 years.

Claim.—1st. In animal shearing or clipping apparatus maintaining a constant and unvarying pressure of the cutter upon the comb by the use of a pin, the upper surface of the head of which is a portion of the surface of a sphere having its centre at the point of the said pin, the head of the said pin being located in and bearing upon a flat surface in an adjustable socket, and its point bearing upon the frame or fork for actuating the cutter, substantially as described. 2nd. In apparatus of the kind hereinbefore described, the construction of a forked arm with its centre-finger formed of a spring. 3rd. In apparatus of the kind hereinbefore described, pivoting the forked arm behind the crank, substantially as hereinbefore described and illustrated in the accompanying drawing. 4th. In apparatus of the kind hereinbefore described, the construction of a forked arm with or without a movable check-piece attached to it about its centre to receive the crank pin roller, substantially as hereinbefore described and illustrated in the accompanying drawing. 5th. In apparatus of the kind hereinbefore described, the use of a balanced crank placed at the end of the driving spindle, in combination with a forked arm and cutter for the purpose of giving a reciprocating motion to such cutter, substantially as described. 6th. The manufacture and use of the improved animal shearing or clipping apparatus hereinbefore described and illustrated in the accompanying drawing.

No. 32,117. Microphone. (*Microphone.*)

Walter Thompson, Newark, N.J., U.S., 20th August, 1889; 5 years.

Claim.—1st. The herein described microphone, combining therein two or more diaphragms connected together by pivoted levers, as and for the purposes set forth. 2nd. The improved microphone herein described, combining therein two or more diaphragms connected together by pivoted lever, and a lever adjustably connected with the carbon connected with the telephone, as set forth. 3rd. In a microphone, the combination, with the case *A*, diaphragm *C*, pivoted lever *b* connecting said diaphragm, with diaphragm *D*, carbon *f*, pivoted lever *d*, and adjustable screw *h*, said diaphragm *D* and carbon *f* being connected with the telephone, all said parts being arranged and combined as described and for the purposes set forth.

No. 32,118. Invalid Bedstead. (*Lit d'invalidé.*)

Alexander Baird, Jr., and William H. Taggart, Jr., Cayuga, Ont., 20th August, 1889; 5 years.

Claim.—1st. The combination, with the bedstead *A*, of the bed bottom sections *B*, *B*, *B*, *B*, shaft *C*, ratchet and pawl *C*, belts *D*, elbow levers *E*, and arms *F*, for the purpose set forth. 2nd. The combination, with the bedstead *A*, and sectional bed-bottom *B*, of the shaft *C*, ratchet and pawl *C*, belt *D*, elbow lever *E*, and arm *F*, as set forth.

No. 32,119. Cemetery and other Fences.

(*Clôture de cimetière et autres.*)

Henry E. Macrea, Hudson, N.Y., U.S., 20th August, 1889; 5 years.

Claim.—1st. The combination, with the post or support having a tapering recess increasing in size toward its inner end, of a metal rod or tube fitting loosely at its end within said recess or socket, rocking locking devices connected intermediately of their length to the sides of the entering end portion of the rod or tube, and a closing flange or nut on the rod arranged to engage with said rocking devices, and operating to spread the inner end portions of the latter within the enlarged portion of the recess or socket in the post or support, substantially as specified. 2nd. The combination of the post or support *A*, having one or more tapering sockets or recesses *b* in it, increasing in size in an inward direction, the metal rod or tube *B*, the angularly constructed half sleeve or bushings *C*, *C* connected as by a pin or bolt *d* with and fitted to rock upon said rod, and the closing nut or flange *D* applied to said rod or tube and to the outer end portions of the half sleeves or bushings, and operating to expand the inner end portions of the latter within the tapering socket or recess in the post or support, essentially as shown and described.

No. 32,120. Cash Carrier. (*Chien de magasin.*)

Robert W. Soper, Detroit, Mich., U.S., 20th August, 1889; 5 years.

Claim.—1st. In a cash and parcel carrier apparatus, a tube having upright and horizontal sections, a flexible car, propelling shaft or pusher located therein and substantially filling the tube, means connected with the upper end of shaft adapted to force the same downward, means connected with its lower end adapted to deliver the thrust of the shaft to the car, and means for returning the shaft to its initial position, substantially as described. 2nd. In a cash and parcel carrier apparatus, a tube having upright and horizontal sections, a car-propelling chain pusher located therein, means connected with the upper end of the chain adapted to force the same downward,

means connected with its lower end adapted to deliver the thrust of the chain to the car, and means for returning the chain to its initial position, substantially as described. 3rd. In a cash and parcel carrier apparatus, a tube having a vertical and a horizontal section, a flexible shaft or pusher located in said tube and adapted at its lower end to impart a thrust to the car, said pusher engaged at its upper end with an actuating cord or strap located wholly outside of said tube, substantially as described. 4th. In a cash and parcel carrier, the combination, with a tube having an upright and a horizontal section, of a flexible pusher located in said tube, an anti-friction roller in the angle formed by said sections, means for forcing said pusher downward and outward against the car, and means for returning the pusher to its initial position, substantially as described. 5th. The combination, in a cash carrier apparatus, of a slotted tube having an upright section and a horizontal section, a flexible car propelling chain pusher located in said tube, and an actuating strap or cord engaged with the chain or its support at or near its upper end, substantially as described. 6th. The combination, with the slotted tube having an upright and a horizontal section, chain pusher, actuating strap and retracting spring of the anti-friction roller located in the angle between the two sections of pipe, substantially as described. 7th. The combination, with the slotted tube F F₁, of the angle fitting F₂ provided with a wearing plate and anti-friction roller, and in connection therewith a flexible propelling shaft located in said tube, and means for actuating said shaft, substantially as described. 8th. The combination, with a tube having upright and horizontal sections, of an interior flexible pusher, a projecting car or driving head at its lower end, and a cushion located back of said driving head to cushion the blow of the car, substantially as described. 9th. The combination, with the tube, flexible pusher, and actuating strap or cord, of a cushion at the top, substantially as described. 10th. The combination, with the tube, flexible propelling shaft or pusher, of a cushion to relieve the impact as the spring returns the chain to its initial position, substantially as described. 11th. The combination, with the tube slotted along its horizontal section, of a propelling car projecting through said slot and adapted to engage the car, substantially as described.

No. 32,121. Folding Reclining Chair.

(*Fauteuil pliant.*)

Frank H. Plummer, Arkansas, Kan., U. S., 20th August, 1889; 5 years.

Claim.—1st. In a reclining chair, the combination, with the seat A, back B pivoted to the rear of said seat, of arm rests c, c to the rear ends of which the said back is pivotally connected at a plane above its connection to the seat legs D supporting said arm rests, and links g, g depending from the forward end of said seat, and said leg rest at the point of their pivotal connection, as set forth. 2nd. In a reclining chair, the seat A having suitable side pieces, the rear ends of which are provided with longitudinally elongated holes, back B, pivotally connected to said seat by means of lateral pins projecting from the lower ends of its side pieces through said elongated holes, and leg rest pivoted to the front of said seat, in combination, with the legs D, arm rests C supported thereby and pivotally connected to the side pieces of said back, and links g connecting the pivotal points of said seat, and leg rest to the forward ends of said arm rests, as set forth. 3rd. In a reclining chair, the seat A, back B pivotally connected to said seat, and head rest consisting of frame M, the lower ends of which are pivotally connected to the sides of the back, braces L oscillatingly connected to the ends of said frame m, and having longitudinal slots therein offset at corresponding points, and pins o, projecting laterally through the slots in said braces from the side pieces in said back, in combination, with the arm rests C to the rear ends of which said back is pivotally connected, legs D supporting said arm rests, and links g, g connecting the forward end of said arm rests to the forward end of the seat, as set forth. 4th. In a reclining chair, the seat A, and back B pivotally connected thereto, in combination, with the arm rests c, to the rear ends of which said back is pivotally connected, plate e secured to the under surface near the rear end of said arm rests, having downwardly depending walls 4 and 5 connected by the web 6 in which is an eye 7, the X, legs D, the upper ends of the forward legs being provided with a stud 8, and spring d, the upper ends of the rear legs being permanently pivoted to the said arm rests nearer their forward ends, as set forth. 5th. In a reclining chair, the seat A, and back B pivotally connected to the rear end thereof, in combination with the arm rests c, to the rear ends of which said back is pivotally connected, the links g, g connecting the forward end of the seat to the adjacent ends, as set forth. 6th. In a reclining chair, the seat A, and back B pivotally connected thereto, in combination with the arm rests c, having a longitudinal slit in their rear ends, plate e having a slit in its rear edge and secured to the under surface of the rear ends of said arm rests, so that the slit therein is in register with the slit in said arm rest, the pin 2 bridging over the slit in said plate e, lugs b₁ secured to the sides of the back, and projecting forward to and pivoted on pins 2, as described, and links g suspending the forward end of the said seat from the said arm rest, as set forth. 7th. In a reclining chair, the seat A, and back B pivotally connected thereto, in combination, with the arm rests c having plate e secured to forward end thereof, with lugs f, f and 7, finger K projecting therefrom, and links g suspending the front end of said seat from the adjacent end of the arm rests, and plate e having downwardly depending parallel walls with their rear edges turned in toward s each other, as set forth. 8th. In a reclining chair, the seat A, back B pivotally connected thereto, and leg rests pivotally connected to the front thereof, whose side frames E extend up beyond the points of pivotal connection with the seat I, straps H, pulleys 12, cord 10, bars F, foot rest G, in combination, with the links g, and arm rest C, as set forth. 9th. In a reclining chair, the seat A, back B, leg rest pivotally connected to the front of the seat having side frames E which extend up beyond the point of pivotal connection with said seat, and spring actuated fingers K, in combination, with the links g and arm rest C to the rear ends of which the back is pivotally connected, and to the front ends of which said links are connected, as set forth.

No. 32,122. Last. (*Forme de chaussure.*)

George H. Clark, Campello, Mass. U.S., 20th August, 1889; 5 years.

Claim.—A last divided transversely from top to bottom, each part having a projecting pin, substantially as and for the purpose set forth.

No. 32,123. Last. (*Forme de chaussure.*)

George H. Clark, Campello, Mass., U.S., 20th August, 1889; 5 years.

Claim.—In a two-part last for boot and shoe work, the heel portion and fore part separated along the line a, and each having a vertical tool receiving hole 20, substantially as described.

No. 32,124. Saw Set. (*Tourne à gauche.*)

Edward Taylor, Amherst, N.S., 20th August, 1889; 5 years.

Claim.—The saw gauge, tooth gauge and striker, combined with the body, guide rod, and hammer, in making a complete saw set, substantially as and for the purposes hereinbefore set forth.

No. 32,125. Lawn Mower.

(*Fauçonneuse de pelouse.*)

William L. Woodruff, Towanda, Penn., U.S., 20th August, 1889; 5 years.

Claim.—1st. As an improvement in lawn mowers, the combination, with the wheel covering plates, of the draft rings attached to or made integral therewith, and the draft ropes connected with said rings, substantially as and for the purpose set forth. 2nd. As an improvement in lawn mowers, the combination, with the covering plate, draft rings and draft ropes, of the ring or rings slipped upon the draft rope, and retained in position by passing one part of said rope through and around the ring, as set forth. 3rd. As an improvement in lawn mowers, the combination, with the covering plates, of the draft ring provided with teeth or projections to fit the surface of said plates, and a securing bolt upon which the ring may be turned to bring it wholly within the periphery of the wheel, substantially as specified. 4th. As an improvement in lawn mowers for mowing terraces, the combination, with the wheel covering plates, of the adjustable draft rings, the draft ropes attached to said rings by snap hooks and the supporting ring or rings slipped upon the draft ropes and acting as a support for the slack part of the rope when the machine is in use, substantially as shown and described.

No. 32,126. Roller for Levelling Snow and Roads. (*Rouleau pour niveller la neige et les routes.*)

Isaac B. Babcock, Newport Centre, Vt., U. S., 20th August, 1889; 5 years.

Claim.—1st. The combination, with the front section having the platform P, of the loops K, M on the front cross-bar and the central longitudinal bar of the frame respectively, the loops Q, R, on the platform, the seat having the hooks J adapted to engage the loops K or Q, and the brace L pivoted to the seat, and having its lower end adapted to engage the loops M or R, as set forth. 2nd. The combination of the front section, having a central rearwardly extended bar, the vertically-disposed roller O secured to the end of said bar, the middle section having a forwardly extended central bar, connected by a universal joint with the front section, and the curved track U secured on the upper side of the middle section, over which the roller O moves, as set forth. 3rd. The combination of the middle section, having its front cross-bar provided with circular ends, the keepers pivoted to the rear cross-bar of the middle section, and adapted to be swung over the circular ends of the front cross-bar of the rear section, and the locking pins passed vertically through the keepers into the bar to which they are pivoted, as set forth. 4th. The combination of the middle section, the keepers pivoted thereto, and the rear section having its front cross-bar provided with a front convex side and engaged by said keepers, as set forth. 5th. The combination of the front section, having the rearwardly extended bar E, the roller O on the rear end of said bar, the tongue hinged to the front end of said section, the seat movably mounted thereon, the middle section loosely connected to the front section, the track U on said section, over which the roller O moves, and the rear section hinged to the middle section, as set forth.

No. 32,127. Metal Sheet for Making Wash Boilers. (*Feuille de métal pour faire les bouilloires des buanderies.*)

Richard Chappell, Moosomin, N.W.T., 20th August, 1889; 5 years.

Claim.—The combination of tin plate c, c, and the rust proof metal D, substantially as and for the purpose hereinbefore set forth.

No. 32,128. Grain Measure and Tally.

(*Mesure-compteur des grains.*)

John N. Holland, Thoop's Spring, Texas, U. S., 20th August, 1889; 5 years.

Claim.—1st. In a grain measure, the combination of the pivoted oscillating chute, the two similar and equal measuring compartments arranged on the sides of the chute, the slides above and below the compartments arranged to cover alternately one the top and the other the bottom of the compartments and moving in opposite directions, and mechanism, substantially as described, whereby said slides

are operated, substantially as specified. 2nd. In a measuring device, the combination of the pivoted oscillating chute, the similar and equal measuring compartments, the inclined planes leading from the chute to the mouths of said compartments, the upper and lower slides moving in opposite directions, and the mechanism, substantially as described, whereby the said slides are operated, substantially as specified. 3rd. The combination, with the oscillating chute, the grain-measuring compartments and the upper and lower slides, of the shaft F, the arm *f* thereon, the arm *e* on the shaft of the chute, the link rod *f*₁, the arms G, G₁ and the link-rods *g*, *g*₁, substantially as specified. 4th. In a grain measuring device, the combination, with the oscillating chute, the similar and equal measuring compartments, the upper and lower slides, and the mechanism, substantially as described, whereby the same are actuated, of the double-armed lever H, the pawls *h*, *h*₁ the wheel I, having twenty teeth, the pin *i* and pointer *i*₁, and connected with the unit-dial having twenty graduations, the wheel J having the pointer *j* and pin *j*₁, the wheel K having the pointer *k*₁ and the detents M, M₁, the wheels J and K having ten teeth, and the tens and hundreds dials, each having ten graduations, substantially as specified.

No. 32,129. Printer's Type.

(*Caractère d'imprimerie.*)

James G. Pavyer, St. Louis, Mo., U.S., 20th August, 1889; 5 years.

Claim.—A type, having the foot or bottom of the base solid and of the full area of the type, and recess in the side leaving the type solid at each of the four vertical corners, and a supporting wall beneath the centre of the face.

No. 32,130. Automatic Cut-off for Gas Burners. (*Détente automatique pour les becs à gaz.*)

Joseph Smith, Toronto, Ont., 20th August, 1889; 5 years.

Claim.—1st. A valve placed within a burner, and connected to a fixed rod located in proximity to the lighting end of the burner, substantially as and for the purpose specified. 2nd. A valve, placed within a burner, and connected to a fixed rod located in proximity to the lighting end of the burner, in combination with a loosely-pivoted weighted eccentric, designed to open the valve, substantially as and for the purpose specified. 3rd. A gas burner A, provided with an elbow B designed to connect with an ordinary gas fixture, a valve D having its end designed to fit against the seat *b*, in combination with the rod H, the bracket I and loosely pivoted eccentric J, substantially as and for the purpose specified. 4th. An annular chamber *a*, having a valve-seat *b*, formed at one end and partition E at its other end, a gasket G fixed to the valve D within the chamber *b*, in combination with the rod H, bracket I and the loosely-pivoted, weighted eccentric J, substantially as and for the purpose specified.

No. 32,131. Sieve Scalper. (*Epurateur des gruaux*)

James H. Craig, Napanee, Ont., 20th August, 1889; 5 years.

Claim.—The combination, with the enclosed frame A having a feed box B, and an agitating shaft D, of the shoe C, and sieves F, H inclined to discharge at opposite sides of the shoe, the cross sieve K discharging at the intermediate side of the shoe, said sieves provided with close bottoms G, I, K₁, the inclined plane J, and the trough B subdivided to receive the several grades from the sieves F, H and bottom K₁, whereby the broken or rolled wheat is separated into four grades at a continuous operation, as set forth.

No. 32,132. Semaphore Signal.

(*Signal sémaphore.*)

The American Semaphore Company, (assignee of Frederick Stitzel and Charles Weinedel), Louisville, Ky., U.S., 20th August, 1889; 5 years.

Claim.—1st. The combination, with a railroad track, of a semaphore signalling apparatus having electro-magnets located at each end of a block of said railroad, a closed circuit through the track and semaphore at one end of the block, and a second closed circuit through the semaphore at the opposite end of the block, said second circuit being adapted to be automatically broken by the operation of the first mentioned semaphore, substantially as set forth. 2nd. The combination, with a railroad track, of a semaphore signalling device having electro-magnets, a closed circuit through the track and semaphore magnets located at one end of a block, a second circuit through a semaphore at the opposite end of the block, and contact pieces attached to the first mentioned semaphore to normally close said second circuit, substantially as set forth. 3rd. The combination, with a railroad track, of two semaphores having electro-magnets, a closed circuit through the railroad tracks, and semaphore located at one end of a block, a second closed circuit through the track, a conducting wire, and a semaphore at the opposite end of the block, and contact pieces attached to the first mentioned semaphore to normally close said second circuit, substantially as set forth. 4th. The combination, with a railroad track, of two semaphores having electro-magnets, a closed circuit through the railroad tracks, and a semaphore located at one end of a block, a second closed circuit through a semaphore at the opposite end of the block, the track, and a connecting wire, contact pieces attached to a rigid part of the first mentioned semaphore and included in said second circuit, and an arm carried by a moving part of the first mentioned semaphore to connect the contact pieces and normally close said second circuit, substantially as set forth.

No. 32,133. Apparatus for the Prevention and Consumption of Smoke and the more complete Combustion of Fuel in Steam Boiler and other Furnaces. (*Appareil pour empêcher et consommer la fumée et permettant de consommer plus complètement le combustible pour les fourneaux des chaudières à vapeur et autres.*)

Louis Jacobs, Sydney Jacobs, Robert Sands and Benjamin F. Marks, (assignees of Alfred Don and John Sands), Sydney, Australia 20th August, 1889; 5 years.

Claim.—As a new article of manufacture, an attachment for steam boiler and other furnaces, consisting of the pipe F, and the annular injector *c*, *c*₁ each formed, arranged and adapted to operate substantially as shown and described for the purpose set forth.

No. 32,134. Can Cap Soldering Machine.

(*Machine à souder les goulots des bidons.*)

Edwin Norton, (co-inventor John G. Hodgson), Maywood, and Oliver W. Norton, Chicago, Ill., U.S., 20th August, 1889; 5 years.

Claim.—1st. In a soldering machine, the combination, with a can carrier having a series of holders, of a series of movable heater irons, and mechanism for simultaneously moving said heater irons into and out of contact with the cans on said holder, substantially as specified. 2nd. The combination with an intermittently moving can carrier furnished with a series of revolving can holders, of a series of intermittently movable heater and soldering tools D, and a common operating bar D₁ to which said tools are secured, substantially as specified. 3rd. The combination with a can carrier furnished with a series of can holders, of a series of heater and soldering tools D, and a series of gas burners or jets F for heating said tools, substantially as specified. 4th. The combination with a can carrier having a series of can holders, of a series of hollow heater and soldering tools D, and a series of burners F for projecting flame into said tools, substantially as specified. 5th. The combination with a can carrier having a series of can holders, of a heater operating bar D₁, and a series of heater tools D mounted upon and carried by said bar, said heater tools having a free sliding connection with said operating bar so that the heater tools will press against the cans by their own gravity, substantially as specified. 6th. The combination with an intermittently moving can carrier having a series of revolving can holders, of a series of hollow heater and soldering tools D, and common operating bar D₁, with which said tools have a limited sliding connection and means for reciprocating said bar to move the tools into and out of contact with the cans, substantially as specified. 7th. The combination with an intermittently moving can carrier having a series of revolving can holders, of a series of hollow heater and soldering tools D, and a common operating bar D₁, with which said tools have a limited sliding connection, and means for reciprocating said bar to move the tools into and out of contact with the cans, and gas burners or jets F for heating said tools, substantially as specified. 8th. The combination with an intermittently moving can carrier having a series of revolving can holders, of a series of hollow heater and soldering tools D, and a common operating bar D₁, with which said tools have a limited sliding connection, and means for reciprocating said bar to move the tools into and out of contact with the cans, and gas burners or jets F for heating said tools, said tools D being hollow, and said burners F projecting the flame into said tools, substantially as specified. 9th. The combination, with a can carrier having a series of can holders, of a heater tool, operating bar D₁, and a series of heater tools D adjustably connected to said bar, substantially as specified. 10th. The combination, with bar D₁, of a series of heater tools D having a vertically and horizontally sliding connection with said bar, and a can carrier furnished with a series of revolving can holders, substantially as specified. 11th. The combination, with a can carrier having a series of revolving can holders, of a heater and soldering tool D having a slight rocking or radial movement in its support to adapt said tool to ride in or follow the seam of the revolving can when said can may be placed somewhat eccentrically in its revolving holders, substantially as specified. 12th. The combination, with a revolving can holder, of a pivotally mounted heater or soldering tool having a limited free rocking or radial movement on its pivot to adapt the tool to follow the seam of the revolving can, the pivot of said tool being about parallel to the axis of the revolving can holder, substantially as specified. 13th. The combination, with a revolving can holder, of a vertically sliding horizontally rocking heater or soldering tool D, whereby the tool is adapted to press with the uniform pressure of its own weight upon the can, and to ride upon and follow the can cap seat or seam groove when the can is placed eccentrically in its revolving holder, substantially as specified. 14th. The combination, with bar D₁, of a series of heater tools D having shanks *d*₁, sliding sleeves *d*₂, arms *d*₃, and brackets *d*₄ secured to said bar D, substantially as specified. 15th. The combination, with bar D₁, of a series of heater tools D having shanks *d*₁, sliding sleeves *d*₂, arms *d*₃, and brackets *d*₄ secured to said bar D₁, said bar D₁ having longitudinal slots for adjustably attaching said brackets *d*₄ thereto, substantially as specified. 16th. The combination, with a can carrier having a series of can holders, of a series of heater tools D having shanks *d*₁, heater bar D₁, sliding sleeve *d*₂, arms *d*₃, adjustable brackets *d*₄, rock shaft H having arms *h*, *h*₁ and means for operating the same, substantially as specified.

No. 32,135. Car Coupler. (*Attelage de chars.*)

Peter J. Palmquist, (assignee of Alfred Swenson), Greenview, Ill., U.S., 20th August, 1889; 5 years.

Claim.—1st. In a car coupler, the combination, with a spring actuated draw-bar mounted to turn in its bearings, and provided with bevelled hooks, of a spring actuated bolt for engaging the draw-bar, and an operating lever connected to said bolt, substantially as described.

2nd. In a car coupler, the combination, with a draw-bar formed with a rib 14, and a boss 15, of a spring connected to the draw-bar and to a fixed portion of the car, a bolt arranged to engage the boss 15, a draw-head formed with hooks 12 and 12a having inclined faces *b*, a chain connected at one end to the draw-bar, and a shaft to which the other end of the chain is connected, substantially as described. 3rd. In a car coupler, the combination of the following elements: a draw-bar 10 formed as described, a spring 21, bolt 30, spring 31 arranged in connection with the bolt, a bolt 44, a spring 45 arranged in connection therewith, an arm 46 extending therefrom, a lever 33 connected to the bolt 30, a lever 35, a rod connecting the levers 33 and 35, a chain 38, and a shaft 37, all the parts being arranged substantially as described.

No. 32,136. Ship. (*Navire.*)

Charles Desmarais and Elzéar Laliberté, St. Jean, Que., 20th August, 1889; 5 years.

Résumé.—Un mécanisme moteur pour navires constitué principalement par l'arbre N à double manivelles O, O au quel sont reliés, les jambes H à aubes planes, mobiles J et les bielles S S, ainsi que les mains Q, Q, oscillant autour du pivot R, le tout tel que ci-dessus décrit et pour les fins sus-mentionnées.

No. 32,137. Channelling Machine.

(*Machine à bouter.*)

Henry C. Sergeant, New York, N.Y., U.S., 28th August, 1889; 5 years.

Claim.—1st. The combination, with a horizontal way or track, of a carriage fitted to travel thereon, a rock drill and a motor for operating the same supported by said carriage, another motor mounted upon the carriage and gearing operated by the last named motor for moving the carriage along said way, and comprising surfaces held in automatically yielding frictional engagement with one another, substantially as described, whereby, when the rock drill becomes stuck, said surfaces will yield and thus automatically stop the said movement of the carriage, substantially as specified. 2nd. The combination, with a stationary frame having a horizontal way or track of a screw fixed in the frame and parallel with the said track or way, a carriage fitted to run on the track or way and provided with a nut engaging said screw, a drill, a drill motor on said carriage, another motor for rotating the nut to move said carriage along, and gearing intermediate of the second named motor, and said nut comprising frictional surfaces having an automatically yielding frictional engagement with said nut, substantially as specified. 3rd. The combination, with a stationary frame comprising a horizontal way or track and a screw also parallel with the way, of a drill carriage fitted to run on the way, a motor on the drill carriage, a nut fitting the screw and held against end movement on the carriage, a gear wheel held in frictional engagement with the end of the nut by spring pressure, and other gear wheels through which said wheel on the nut is driven from the motor, substantially as herein described. 4th. The combination, with a stationary frame and its track or way, of a drill carriage mounted thereon, a screw in the frame parallel with said track or way, and a nut fitting the screw and held against endwise movement independently of the carriage, the wheels *f* in frictional engagement with the ends of the nut, and the bolts and springs for binding them against the nut, the shaft *f*₃ and the wheels *f*₁, *f*₂ fast thereon, and the reversely set bevel wheels *f*₅, *f*₆ loose thereon, the clutch *f*₈, and its shifting lever *f*₉, and the motor having upon its shaft the bevel pinion *f*₁ engaging the wheels *f*₁, *f*₂, substantially as herein described.

No. 32,138. Process to be used in Connection with the ordinary method of Tanning. (*Procédé pour servir à la méthode ordinaire de tannage.*)

James W. Hitt, Lisle, N.Y., U.S., 28th August, 1889; 5 years.

Claim.—The improved mode of tanning heretofore described, which consists in submitting the depilated hides to a mixture of saltpetre, alum and Glauber's salt, in admixture with a bark liquor, in the proportion and manner and during the time, substantially as set forth.

No. 32,139. Axle Thimble. (*Dé d'essieu.*)

Erastus Lockman, Kelvin, Ont., 28th August, 1889; 5 years.

Claim.—1st. The axle thimble A provided with the lug C, substantially as herein shown and described. 2nd. The combination of the thimble A having the lug C, with the tie rod D having the nut E, substantially as herein shown and described. 3rd. The combination of the thimble A having the lug C, with the tie rod D having the nuts F, and secured to a vehicle axle by the bolts F, all substantially as herein shown and for the purpose specified.

No. 32,140. Box and Holding Case Adapted for Various Purposes. (*Boîte ou nécessaire.*)

Edwin Reynolds, Providence, R.I., U.S., 28th August, 1889; 5 years.

Claim.—1st. The combination, with the case made in two parts hinged to each other, of the box provided with a slotted bottom or platform and pivoted to the case at the line of the hinge joint, and the links pivoted at their outer ends to each of the two parts, and to each other with a stud which moves in the slot of the bottom of the box or platform, to hold the box in proper line with the case in the opening and closing movement, substantially as described. 2nd. The combination, with the case made in two parts, hinged to each other, of the box provided with a spring operated cover, and with a slotted

bottom or platform, and pivoted to the case at the line of the hinge joint, and the links pivoted at their outer ends to each of the two parts and to each other, with a stud which moves in the slot of the bottom of the box or platform, substantially as described. 3rd. The combination with the case made in two parts, hinged to each other, and provided with the shelves, as described, of the box provided with a slotted bottom or platform, and a spring operated cover, and pivoted to the case at the line of the hinge joint, and the links pivoted at their outer ends to each of the two parts and to each other with a stud which moves in the slot of the bottom of the box or platform, substantially as described. 4th. The combination, with the case made in two parts, hinged to each other, and each provided with a protruberant bottom plate, of the box provided with a slotted bottom or platform and pivoted to the case at the line of the hinge joint, and the links pivoted at their outer ends to each of the two parts and to each other with a stud which moves in the slot of the bottom of the box or platform, substantially as described.

No. 32,141. Combination Baking Pan.

(*Tourtière à combinaison.*)

Alexander B. Campbell, Ottawa, Ont., 28th August, 1889; 5 years.

Claim.—The combination of the pan B with the cover A, the hinge C and the plate D, substantially as hereinbefore shown and described, and as and for the purposes set forth.

No. 32,142. Tire Truing Machine.

(*Machine à redresser les bandages des roues.*)

Thomas J. Reid, Gananoque, Ont., 28th August, 1889; 5 years.

Claim.—1st. In a tire truing machine, the combination, with a circular series of segmental dies, of a like series of similar dies arranged concentrically and in the same plane therewith, with means, such as racks, pinions and connections for radially reciprocating each series of dies in opposite directions, in the manner and for the purpose described. 2nd. In a tire truing machine, the combination, with a circular series of segmental dies, of a similar series of concentrically arranged dies, radially-extending rack-arms fixed to and carrying said dies, and means, such as pinions, central disk and connections for simultaneously reciprocating the arms of each set in opposite directions, in the manner and for the purpose described. 3rd. In a tire truing machine, the combination, with a circular series of segmental dies, of a similar series of concentrically-arranged dies, centrally-extending arms or racks fixed to and carrying said dies, racks of each series alternating with each other, pinions engaging each pair of alternating racks, and means, such as the disk K, and rotating devices for operating the pinion in the manner and for the purpose described. 4th. In a tire truing machine, the combination, with a circular series of segmental dies, of a similar series of concentrically-arranged dies, centrally-extending racks fixed to and carrying said dies, racks of each series alternating with each other, pinions engaging each pair of alternating racks, levers operating said pair, said pinions having their inner ends slotted and fixed to a centrally-revolving disk, and means for revolving said disk, in the manner and for the purpose described.

No. 32,143. Bottle Stopper.

(*Bouchon de bouteille.*)

Justus A. Traut, New Britain, Conn., U.S., 28th August, 1889; 5 years.

Claim.—1st. The combination of an expansible block, a central bolt extending through said block, devices for operating said bolt, a cap plate extending laterally beyond the adjacent parts for resting upon the mouth of the bottle, and the block 6, consisting of sheet metal in the form of a tube open at its upper end, and with the lower end rounded and perforated to receive the body of said central bolt, the confronting faces of said cap and the block 6 being provided with a centering projection and recess respectively, substantially as described and for the purpose specified. 2nd. The combination of an expansible block, a central bolt extending through said block, devices for operating said bolt, the cap-plate 8 extending laterally beyond the adjacent parts for resting upon the mouth of the bottle, and having also the central inwardly-projecting tenon 11, and the block 6 of sheet metal, having a rounded and perforated lower end, and an open upper end which receives and is fitted to the tenon on said cap, substantially as described and for the purpose specified. 3rd. The combination of an expansible block, a central bolt extending through said block and having a threaded lower end, devices for operating said bolt, the cap-plate adapted to rest on the mouth of the bottle, the perforated block 6 and the adjusting nut 5, consisting of the sheet metal shell, and internal nut 15 at its upper end, the end of the shell and upper face of said nut confronting the expansible block, substantially as described and for the purpose specified.

No. 32,144. Pillow and Slip or Removable Cover. (*Oreiller et taie d'oreiller.*)

William T. Doremus, Flatbush, N. Y., U. S., 28th August, 1889; 5 years.

Claim.—1st. A removable pillow cover or slip, made, substantially as herein shown and described, with a series of longitudinal compartments secured together in parallel relation with each other on adjacent sides intermediately of the entire cluster, and adapted to contain independent separately covered rolls or pillows, substantially as specified. 2nd. The combination, with a removable pillow cover or slip, constructed with a series of longitudinal compartments, secured together in parallel relation with each other on adjacent sides intermediately of the entire cluster of independent separately-covered rolls or pillows, loosely or removably fitted within said compartments, essentially as shown and described.

No. 32,145. Self-Registering and Checking Apparatus for Tram Cars and Omnibuses and like Purposes. (*Appareil automatique pour enregistrer et contrôler pour les chars de tramways et omnibus et des fins semblables.*)

Thomas Gregory, Southport, Eng., 28th August, 1889; 5 years.

Claim.—1st. In checking apparatus, the operating of a travelling ribbon or ribbons, and stamping the same by means of a sliding or moving segment or segments, of a curved door forming a wicket, for the purpose and in manner substantially as herein shown and described. 2nd. In checking apparatus, the operating of a stamper by means of a depressible stop within or about the wicket, in combination with the apparatus named in claim 1st, for the purposes and in manner substantially as herein shown and described. 3rd. In checking apparatus, the operating of a travelling ribbon or ribbons, and stamping the same by means of depressible stops leading to the roof of the car, for the purpose and in manner substantially as shown and described. 4th. In checking apparatus, the employment of a sliding bar on which varying stampers are mounted, and actuating the same by a notched wheel or equivalent, so as to bring the same consecutively into gear, whether combined with a disc or not, for the purpose and in manner substantially as herein shown and described. 5th. In checking apparatus, the combination of parts, for the purpose and in manner substantially as herein shown and described.

No. 32,146. Conductor of Electricity. (*Conducteur d'électricité.*)

William A. Conner and Joseph W. Marsh, Pittsburgh, Penn., U. S., 28th August, 1889; 5 years.

Claim.—1st. An electric cable or conductor, having a number of spirally-arranged insulated conductors, each conductor having a cross-section greater in breadth than in thickness, substantially as described. 2nd. An electric cable or conductor, having one or more central conductors or cores, and a number of insulated conductors arranged spirally in one or more circles around the central conductor or core, and each conductor forming in cross section a segment of a ring or circle. 3rd. An electric cable, having a central conductor or core, and a number of insulated conductors, arranged spirally around the central conductor, and each having a cross-section greater in breadth than thickness, and composed of a number of naked wires or ribbons, substantially as described.

No. 32,147. Car Coupling. (*Attelage de chars.*)

Michael D. Cox, Knoxville, Tenn., U. S., 24th August, 1889; 5 years.

Claim.—In a car coupling, the combination of the oblong frame, provided with the spring and the pin provided with shoulder and the notch B, all substantially as described.

No. 32,148. Construction of Boats. (*Construction des bateaux.*)

William Heslop, Leeds, Eng., 28th August, 1889; 5 years.

Claim.—The method of constructing boats without seams, pressed out of sheet metal, as set forth.

No. 32,149. Attachment for Well Curbs. (*Disposition aux dalots des pompes*)

John T. Lenoir, Columbia, Miss., U. S., 28th August, 1889; 5 years.

Claim.—1st. The combination, with the curb plate having a vertical opening, of the upwardly and forwardly swinging trunk hinged on its lower side to the upper side of the curb plate, and a fastening in rear of said hinge for securing the trunk to the curb plate, substantially as set forth. 2nd. The combination, with a well curb and an apertured curb plate attached thereto, of a guide cylinder secured to the curb plate extending downward within the curb, and a trunk provided with a delivery spout hinged at one side of the said curb plate, substantially as and for the purpose set forth. 3rd. The combination, with a well curb and an apertured curb plate secured thereto and provided with a staple, of a guide cylinder attached to the curb plate extending downward within the curb, and a trunk pivoted upon one side of the curb plate, provided with a delivery spout, and having an apertured projection to receive said staple, substantially as set forth. 4th. The combination, with a well curb and a curb plate, of hinge strap plates having the upper member adjustably secured to the curb plate, binding plates clamping the lower member of the strap plates, and rods connecting the binding plates, substantially as shown and described. 5th. The combination, with a well curb and a curb plate provided with a well-opening, and having a series of apertures arranged around said opening, of hinged strap plate, having the lower member securely attached to the well curb, and bolts passing through the upper member and through the registering aperture in the curb plate, substantially as shown and described. 6th. The combination, with a well curb, an apertured curb plate attached to the same, a guide cylinder attached to the said curb plate, extending downward within the curb and provided with an outwardly flaring lower end, of a trunk, provided with a delivery spout hinged at one side of the curb plate, a vertical pin secured within the body of the trunk, a well bucket provided with a valve in the bottom, and means, substantially as shown and described, for raising and lowering the well bucket, as and for the purpose set forth. 7th. The combination, with a well curb, a curb plate secured thereto, a guide cylinder provided with a series of longitudinal slots at the upper end, and an outwardly flaring lower end hinged to the curb plate and extending downward within the curb, of a trunk provided with a delivery

spout hinged at one side of the curb plate, a vertical pin secured within the body of the trunk, arms extending upward from the curb plate, a drum pivoted at one side of the curb plate, and provided with a spring-actuated pawl, a pulley located at the upper end of the said arms, a well bucket provided with a valve in the bottom, and a rope connecting the drum and the well bucket passing over the said pulley, all combined for operation substantially as set forth.

No. 32,150. Machine for Spinning Hemp and other Fibrous Materials. (*Machine à filer le chanvre et autres matières fibreuses.*)

John F. Stairs, Halifax, N.S., 28th August, 1889; 5 years.

Claim.—1st. The combination, with the endless series of gill-pin bars and the fier, of mechanism interposed between the fier and said series of bars for the purpose of driving the said bars from the fier, substantially as herein described. 2nd. The combination, with the gill-bar chains and their carrying shafts and the fier, of mechanism between the fier and one of the said carrying shafts, whereby the movement of the gill-pins is derived from the fier, substantially as and for the purpose herein described. 3rd. The combination, with the main shaft, the fier, the capstan therein, the gill bar chains and one of the carrying shafts for the latter, of a shaft H between the fier and capstan, and one of the said carrying shafts, a pulley e on the fier, a pulley m on the capstan, pulleys J, I on the said shaft H, belts j, I between the said pulleys e, J and the said pulleys I, m respectively, and gearing between the said shaft H and the carrying shaft g, whereby the gill-pin bars and the capstan are both driven from the fier, all substantially as herein set forth.

No. 32,151. Method and Apparatus for Swaging Forms of Metal in Dies Formed in Rollers. (*Méthode et appareil d'étampage des formes de métal dans des étampes formées dans des rouleaux.*)

William L. Price, Philadelphia, Penn., U. S., 28th August, 1889; 5 years.

Claim.—1st. The improved method of swage metallic shapes, by passing such articles between rolls diagonally to the plane of their axis into helical swages formed in said rolls, substantially as set forth. 2nd. The improved rolling swages consisting of rolls fitted in pairs with opposing helical swages formed therein, substantially as set forth. 3rd. The improved swaging rolls consisting of a pair of opposing rolls, provided with helical opposing recesses formed therein, and cavities at the terminations of said helical recesses adapted to receive removable and adjustable dies, substantially as set forth. 4th. Helical swaging rolls consisting of a central body or shaft, and removable zones having helical dies or grooves formed therein, and arranged to form when assembled dies for swaging lengths of work, substantially as set forth.

No. 32,152. Photographic Washing Apparatus. (*Appareil à laver photographique.*)

James W. Dalrymple, Owensburg, Ind., U. S., 28th August, 1889; 5 years.

Claim.—1st. A rocking washer or pan provided with waste pipes attached to itself, and extending from the ends to near the centre, where they are united into a down spout, substantially as shown and described. 2nd. The combination, in a washing machine, with a double pan, of waste pipes connected to its ends, and perforated pipes running across inside said ends and connected with said waste pipes, substantially as set forth. 3rd. In a washing machine, in combination with the waste pipes thereof, perforated pipes connected to said waste pipes and revolvably mounted, whereby the perforations may be given different elevations and the depth of water to be maintained in the pans thus regulated, substantially as set forth. 4th. In a washing machine, a double rocking pan having rounded ends which extend a short distance in from the extreme ends of the pan, substantially as described and for the purposes specified. 5th. The combination in a washing machine, with a double rocking pan, having a central partition extending above its upper edge, of a saddle-like piece b for receiving the discharge of water, and the water pipe having its discharging end vertically above the pivot point of said pan and over said saddle-like piece, substantially as set forth.

No. 32,153. Method and Machine for Scouring and Polishing Cereals. (*Méthode et machine de nettoyage et de polissage des céréales.*)

William Ager, Bloomburg, Penn., U. S., 28th August, 1889; 15 years.

Claim.—1st. The art, method or process herein set forth for cleaning and decortiating wheat and other cereals, consisting in first subjecting the grain to the action of a decorticator having an abrading surface of Derbyshire stone, and then to a similar process in a mill having a facing of Medina brown stone of the character specified, substantially as described. 2nd. In a decortiating apparatus, the combination, with an outer drum and an inner revolving cylinder, both provided with suitable abrading surfaces, of air blast conductors entering the wall of the outer drum for delivering air currents in a direction opposite to the revolution of the inner cylinder, substantially as described. 3rd. In a decortiating apparatus, the combination, with an outer drum and an inner revolving cylinder, both provided with abrading surfaces, of means for inducing an air current within the cylinder which is provided with openings in its cylindrical wall, and air blast conductors entering the wall of the outer drum in a direction substantially tangential to the cylinder and opposite to the direction of its

revolution, substantially as described. 4th. In a grain decorticating apparatus, the combination, with an outer drum having an inner im perforate abrading surface provided at intervals with foraminous openings, of an inner revolving cylinder having blast openings in its walls, and provided with means for inducing an air current within the cylinder, and air blast conductors passing through the outer drum for delivering air blasts in a direction substantially tangential to the cylinder and opposite to its direction of revolution, substantially as described. 5th. In a grain decorticating apparatus, the combination, with an outer drum having an inner abrading surface provided with foraminous openings at intervals, of an inner revolving cylinder having blast openings in its wall, and provided at its ends with hooded air-forcing openings, and air-blast conductors entering the outer drum in a direction contrary to the direction of revolution of the inner cylinder, substantially as described. 6th. The improvement in the method, art or process of decorticating grain, which consists in feeding the cereal between a stationary abrading surface, and a rotating drum clothed with bristles or tampion, and forcing one or more currents of air between the abrading surfaces in a direction opposite to the revolution of the drum, substantially as described.

No. 32,154. Registering Gauge for Railway Car Brakes. (*Jauge à registre pour les freins de chemins de fer.*)

Robert Potts, St. Thomas, Ont., 29th August, 1889; 5 years.

Claim.—1st. In car brakes, the indicator G secured to the bottom of the car-body, and provided with a slide actuated by the piston-rod of the brake-cylinder in one direction only, whereby the maximum motion of the brake-piston up to the time of the inspection of the indicator is recorded, as and for the purpose stated. 2nd. The combination in brake indicators with the base N, of the standards H, H₁ having heads h, h₁, the bar I having scale indications L, and the slide K retained in position upon said rod by the feather and spring, as and for the purpose set forth.

No. 32,155. Sheet Metal Working Machine for making Fencing and Lathing, and Clinching and Counter-Clinching Sheet Metal together, and Punching Holes in the same. (*Machine à travailler le métal en feuille pour faire de la clôture et du lattis agraffer et contre-agraffer le métal en feuille, ensemble, et y percer des trous.*)

Elish Hawes, Sacramento, Cal., U.S., 30th August, 1889; 5 years.

Claim.—1st. The combination of the revoluble rolls H, I, having the projecting punches or cutters (or both) and the countersunk opening, and grooves or recesses on their opposing faces, for the purpose set forth, substantially as described. 2nd. The combination of the revoluble rolls H, I, having the projecting punches or cutters (or both) and the countersunk openings, and grooves or recesses on their opposing faces, and the gears K, L connecting said rolls, substantially as described. 3rd. The combination, of revoluble pairs of rolls H, I, having the punches or cutters (or both) and the countersunk openings and recesses or grooves on their opposing faces, the gears K, L connecting said rolls together in pairs, and the driving-shaft T having the gear wheel V meshing with and connecting the gears L for the purpose set forth, substantially as described. 4th. The combination of the pairs of rolls geared together and having the projecting punches or cutters (or both) and the countersunk openings or recesses on their opposing proximate faces, and the guiding-apron W arranged between the said pairs of rolls, substantially as described.

No. 32,156. Cutter Bar. (*Porte-outil.*)

Caleb Hank, Jackson, Ohio, U.S., 30th August, 1889; 5 years.

Claim.—The combination, with the cutter-bar provided with studs extending at right angles thereto a distance greater than the thickness of the cutters, two studs for each cutter, of the cutters provided with two holes, each adapted to be slid over the studs, and the herein described locking-bar provided with a series of holes corresponding to the holes in the cutters, and to the studs projecting through the cutters, and fastening-screws for securing the locking-bar to the cutter-bar in engagement with the cutters, substantially as set forth.

No. 32,157. Refuse Furnace.

(*Fourneau à déchets.*)

Henry W. Whiting, Philadelphia, Penn., U.S., 30th August, 1889; 5 years.

Claim.—1st. The combination in a garbage furnace, of the combustion chamber a, and the main chamber E, and garbage chamber D, and grates separating the two, with a flue connecting the garbage chamber with the front of the combustion chamber, substantially as and for the purpose described. 2nd. The combination in a garbage furnace, of the combustion chamber and the main chamber, with the garbage chamber above the main chamber having a tapered bottom formed of a series of transverse tubes, substantially as described. 3rd. The combination in a garbage furnace, of the combustion chamber, the main chamber with the garbage chamber having a tapered bottom, composed of a series of tubes communicating with each other and with a water supply pipe, and a steam dome, substantially as described.

No. 32,158. Knitting Machine.

(*Machine à tricoter.*)

Per P. Olsson, Stockholm, Sweden, 30th August, 1889; 5 years.

Claim.—1st. In knitting machines according to the Lamb system, the disposition that the middle lock triangle is by means of bolts or screws directly united with a slide, having for its purpose to transfer the motion of the triangle. 2nd. In knitting machines according to the Lamb system, the disposition that the shoulders which communicate the motion to the middle lock triangles may be moved along the slide bars. 3rd. In knitting machines according to the Lamb system, the disposition that the slides actuating the middle lock triangles move in the same direction as the triangles, so that the slides, when at their highest or lowest position can pass the parts, which have effected their motion without encountering them, as the case is with other machines, and thus forcing the whole movable top of the machine, (the covers) to stop. 4th. In knitting machines according to the Lamb System, the disposition of a spring in every needle groove which springs have for their purpose under the work to prevent the needles from sinking down too far, and under which springs the ends of the needles not in work is drawn down, whereby the needles are prevented from getting up spontaneously. 5th. In knitting machines according to the Lamb system, a yarn stretcher consisting of an elastic arm fixed upon the yarn carrier and clasp the yarn by means of an eye or a hook, and which is retained when no stretching of the yarn is needed, but disengaged in the moment when the yarn should be stretched. 6th. In knitting machines according to the Lamb system, a disposition for retaining the yarn carrier at the return of the lock, consisting of a flat spring (dragging on the needle bar, and fixed at the yarn carrier or an elastic plate pivoted on the reel. 7th. In knitting machines according to the lamb system, a disposition for moving the needle bed in the longitudinal direction of the machine, consisting of an eccentric situated under the needle bed parallel with the same, and actuated by a lever, this eccentric acting upon two rollers fixed on the needle bed. 8th. In knitting machines according to the Lamb system, a disposition for being able conformably to the nature of the work quickly to lengthen or to shorten the crank, consisting therein that the crank is pushed in a centre situated on the end of the shaft, and secured there in the wanted position by a pin in the centre, which by a spring or by an attachment nut is forced into and retained in holes made in the crank. 9th. In knitting machines according to the Lamb system, the disposition that the lateral triangles are retained directly at the under side of the coverings by means of pins, with heads entering into T or dovetail-shaped grooves in the lock cover, which grooves extend somewhat in the cover, so that the whole groove is to be found in the cover and at the top is covered by the same. 10th. In knitting machines according to the Lamb system, the disposition that the slides imparting the motion to the middle lock triangles are provided with rhombic, rhomboid, or round shoulders, or small friction rollers, co-operating with shoulders movable along the slide bars. 11th. In knitting machines according to the Lamb system, an apparatus movable along the slide bars having for its purpose in so called "open knitting" to impart the motion to the middle lock triangles, consisting of levers combined to a knee joint system, and of a spring actuating the one lever, and which levers are so placed with relation to the slide shoulder of the middle triangle that this shoulder, whenever it passes the apparatus, obtains an alternate motion up or down. 12th. In knitting machines, according to Lamb's system, an arrangement whereby the lock triangle is put into or out of working position when the lock reaches its turning point, consisting in connecting the triangle with an arm, which is affected by fixed or movable pins or notches arranged on the guide bar in the same plane as the lock moves, which pins or notches bring the arm to turn.

No. 32,159. Rotary Engine. (*Machine rotative.*)

John B. Harris, Eutaw, Ala., U.S., 30th August, 1889; 5 years.

Claim.—1st. In a rotary engine, the combination, with a cylinder and a piston mounted to turn therein, of valves held to slide radially in the cylinder and forced in contact with the periphery by the action of the motive agent, substantially as shown and described. 2nd. In a rotary engine, the combination, with a cylinder provided with radial slots connected at opposite sides with inlet and outlet ports, of a valve held to slide in each of the said slots, and provided on opposite sides with inlet and outlet grooves, adapted to connect the interior of the said cylinder with the said inlet and outlet ports, substantially as shown and described. 3rd. In a rotary engine, the combination, with a cylinder provided with radial slots, connected at opposite sides with inlet and outlet ports, of a valve held to slide in each of the slots, and provided on opposite sides with inlet and outlet grooves adapted to connect the interior of the said cylinder with the said inlet and outlet ports, and a piston held to turn in the said cylinder, and provided with projections in contact with the inner surface of the said cylinder, the said valves being pressed in contact at their inner ends with the periphery of the said piston by the action of the motive agent, substantially as shown and described. 4th. In a rotary engine, a valve mounted to slide, and provided at opposite sides with inlet and exhaust grooves, substantially as shown and described. 5th. In a rotary engine, the combination, with the cylinder, provided with radial slots and inlet and outlet ports leading at opposite sides into the said slots, of cylinder heads held on the said cylinder, and forming with the latter annular grooves, into which lead the said inlet and outlet ports, substantially as shown and described. 6th. In a rotary engine, the combination, with the cylinder, provided with radial slots and inlet and outlet ports leading at opposite sides into the said slots, of cylinder heads held on the said cylinder and forming with the latter annular grooves, into which lead the said inlet and outlet ports, and a valve held to slide in the said slots, and provided at opposite sides with grooves, registering at all times with the said inlet and outlet ports, substantially as shown and described. 7th. In a rotary engine, the combination, with the cylinder provided with radial slots and inlet and outlet ports leading at opposite sides into the said slots, of cylinder heads held on the said cylinder and forming with the latter annular grooves, into

which lead the said inlet and outlet ports, a valve held to slide in the said slots, and a piston held to turn in the said cylinder, and provided with projections in contact with the inner surface of the said cylinder, the said valves being forced in contact at their inner ends with the periphery of the said piston by the action of the motive agent entering through the said inlet ports, substantially as shown and described. 8th. In a rotary engine, the combination, with the cylinder provided with radial slots and inlet and outlet ports leading at opposite sides into the said slots of cylinder heads held on the said cylinder, and forming with the latter annular grooves, into which lead the said inlet and outlet ports, and inlet and outlet pipes connecting with the said annular grooves to admit and exhaust the motive agent, substantially as shown and described. 9th. In a rotary engine, the combination, with the cylinder, provided with radial slots and inlet and outlet ports, leading at opposite sides into the said slots, of cylinder heads held on the said cylinder, and forming with the latter annular grooves, into which lead the said inlet and outlet ports, a valve held to slide in the said slots, and a piston held to turn in the said cylinder, and provided with projections in contact with the inner surface of the said cylinder, the said valves being forced in contact at their inner ends with the periphery of the said piston by the action of the motive agent entering through the said inlet ports and inlet and outlet pipes connecting with the said annular groove to admit and exhaust the motive agent, substantially as shown and described. 10th. In a rotary engine, the combination, with the cylinder, provided with radial slots and inlet and outlet ports leading at opposite sides into the said slots of cylinder heads held on the said cylinder and forming with the latter annular grooves, into which lead the said inlet and outlet ports, a valve held to slide in the said slots, and a piston held to turn in the said cylinder, and provided with projections in contact with the inner surface of the said cylinder, the said valves being forced in contact at their inner ends with the periphery of the said piston by the action of the motive agent entering through the said inlet ports, inlet and outlet pipes connecting with the said annular groove to admit and exhaust the motive agent, and means, substantially as described, for reversing the motion of the engine, substantially as specified.

No. 32,160. Band Cutter. (*Coupe-hart.*)

Robert Thompson, Kemnay, Man., 30th August, 1889; 5 years.

Claim.—A band-cutter, consisting of a blade A, having a hook-shaped cutting edge *a*, the packing strips B laid along each side of one of the plain edges of the blade, two leathers C secured to the packing strips and blade by rivets, and the lace D passing through said leathers, substantially as set forth.

No. 32,161. Grain Drill. (*Semoir en ligne.*)

Charles D. Fendel, Butte, M.T., U.S., 30th August, 1889; 5 years.

Claim.—1st. In a grain drill, the combination, with a cylinder, provided with a fixed number of circumferentially-grouped pockets, arranged a set distance apart, and a sleeve passing longitudinally through said cylinder, having teeth produced in the extremities of an axle passing through said sleeve, a spring-actuated clutch-section splined upon said axle, engaging the toothed surface of the sleeve drive-wheels secured to the axle, of as many times greater diameter than said cylinder as the desired distance between the seed, when dropped, is times greater than the distance between the pockets, brackets pivoted to the bearings of the said axle engaging the movable clutch-section, and drills supported from said brackets beneath the several groups of pockets, substantially as shown and described. 2nd. In a grain drill, the combination, with a cylinder provided with a number of circumferentially-grouped pockets arranged a set distance apart, a sleeve longitudinally fitted in said cylinder, having toothed extremities, a hopper supported above the cylinder partitions dividing said hopper into a series of chambers, embracing two of said groups of pockets, said chambers having inclined bottoms and toothed wheels secured to the extremities of said cylinder, of an axle passing through the sleeve of the cylinder, a spring-actuated clutch splined upon said axle, brackets journalled in the bearings of the axle, a lip engaging said clutch, a platform adjustably suspended from said brackets, drills alternately secured in said platform, and a spring-actuated frame engaging the toothed wheels of the cylinder and adjustably attached to the dropping mechanism of the drill, substantially as shown and described. 3rd. In a grain drill, the combination, with a cylinder, provided with a number of circumferentially-grouped pockets, arranged a set distance apart, a sleeve longitudinally fitted in said cylinder, having toothed extremities, a hopper supported above the cylinder partitions, dividing said hopper into a series of chambers, embracing two of said groups of pockets, said chambers having inclined bottoms and toothed wheels secured to the extremities of said cylinder, of an axle passing through the sleeve of the cylinder, a spring-actuated clutch section splined upon said axle, brackets journalled in the bearings of the axle, having a lip engaging said clutch, a platform adjustably suspended from said brackets, drills alternately secured in said platform, a spring-actuated frame engaging the toothed wheels of the cylinder and adjustably attached to the dropping mechanism of the drill, a frame supported upon the axle surrounding the cylinder arms projected from said frame, a rock-shaft journalled in said arms, a connection between said rock-shaft and drill-carrying frames, and a lever projected from said rock shaft, substantially as shown and described, whereby the drill-carrying frame may be elevated or depressed, as desired.

No. 32,162. Coal Oil Stove.

(*Poêle à pétrole*)

John J. Tresidder, Montreal, Que., 30th August, 1889; 5 years.

Claim.—A coal oil stove, consisting of box A, damper B and covers C, all formed and arranged as and for the purpose set forth.

No. 32,163. Car Coupler. (*Attelage de chars.*)

Jacob Rhule and Charles W. Seovel, Pittsburgh, Penn., U. S., 30th August, 1889; 5 years.

Claim.—1st. In a car coupling, the combination, with a draft-plate fixed to the car body, a sliding draw-head, a draw-bar working loosely in the draft-plate and the draw-head, and having end stops, cushioning springs on the draw-bar between its rear end stop and the draft-plate, and between the draw-head and the draft-plate respectively, of a spool placed loosely on the draw-bar, between the draw-head and the draft plate, substantially as described. 2nd. In a car coupling, an angular metallic draft-sustaining brace, having its end at the apex of the angle, bent downward at right angles, and apertured to form a transverse draft-plate, and the metal at opposite sides of said draft-plate bent downward to form parallel strengthening brackets at right angles thereto, substantially as described. 3rd. The combination, with the longitudinal beams of a car bottom and the bolster, of an angular brace carrying a draft-plate, bolts connecting the ends of said brace with the bolster, a rigid transverse bar bridging the angular brace and bolts, each passing through an end of the transverse bar, the corresponding arm of the brace and the longitudinal car beam thereabove, substantially as described. 4th. In a car-coupling, an angular draft-sustaining brace, having its forward angle end bent down to form a draft-plate, in combination with a re-enforcing plate welded or riveted to the outer face of the draft-plate, substantially as described.

No. 32,164. Mode or Means for Suspending the Pendulums of Clocks.

(*Mode ou moyens de suspendre les pendules des horloges.*)

Arthur Drondi, Dresden (assignee of Joseph Werner, Leipsig), Germany, 30th August, 1889; 5 years.

Claim.—1st. The suspension springs D, D, connected by the anchor spindle B and fixed to an adjustable carrier A, in combination with an adjusting lever F, carrying the suspension hook *m*, which is hooked to the anchor spindle, substantially as and for the purpose set forth. 2nd. The suspension springs D, D, connected by the anchor spindle B and fixed to an adjustable carrier A, in combination with the lever F carrying the suspension hook *m*, which is hooked to the anchor spindle, and with the fulcrum or pin *g*, and the screw *h* fixed to the pendulum rod for adjusting said lever F, substantially as and for the purpose set forth. 3rd. The suspension springs D, D, connected by the anchor spindle B and fixed to an adjustable carrier A, in combination with the lever F carrying the suspension hook *m*, which is hooked to the anchor spindle, and with the recessed plate *n*, the plate *o* on the pendulum rod and the screw *g*, substantially as and for the purpose set forth.

No. 32,165. Motor for Sewing Machines.

(*Moteur pour machines à coudre.*)

The Brosins International Motor Sewing Machine Company (assignee of John M. Brosins, Atlanta, Ga., U. S., 30th August, 1889; 5 years.

Claim.—1st. A means for operating a sewing machine, consisting of a spring-driven train of gearing, connected directly with the machine, and mounted partly within the arm of the machine-head, and partly in a casing beneath the table, said arm of the machine-head being hinged to the table and adapted to carry with it the portion of the train of gearing therein enclosed, substantially as shown and described. 2nd. The combination, with the motor frame, the head, their hinged connection and the portion of the train, of gears contained in said frame and head, of the means employed for connecting them and preventing further movement of the gears when the parts are disengaged, consisting of the notched lug N, lever M, pin O attached to said lever, and the gear O' provided with holes to receive said pin, substantially as shown and described. 3rd. As a means for winding driving springs, the ratchets A and A', the shaft B and the sleeve G, the lever C, pawls *c*, spring *c*1, cam D, lever d and connecting rod *d*1, combined and arranged substantially as shown and described.

No. 32,166. Tension Weight for Shuttles.

(*Pesée de tension pour les navettes.*)

Harold Kelly (assignee of Mathias Mercier), Biddeford, Me., U. S., 30th August, 1889; 5 years.

Claim.—1st. The combination, with a shuttle body, of a tension weight pivoted at one end within the shuttle body, and having its free end bevelled, substantially as set forth. 2nd. The combination, with a shuttle body, of a tension weight having one end free and bevelled, and the other loosely held in a clasp, said clasp being attached to the shuttle body, substantially as set forth.

No. 32,167. Railroad Water Tank.

(*Citerne d'alimentation de chemin de fer.*)

John Skinner, (co-inventor with Rolly W. Jackson), and Henry Widows, Newman, Ill., U. S., 30th August, 1889; 5 years.

Claim.—The anti-freezing water tank consisting of the tank, with chamber, and valve seat X, valve A, lever D, rod F, air tube G, valve H, and steam pipe N, constructed and arranged substantially as shown and described.

No. 32,168. Machine for Polishing Wood.

(*Machine à polir le bois.*)

The Berlin Machine Works, (assignees of James E. Carpenter), Beloit, Wis., U. S., 30th August, 1889; 15 years.

Claim.—1st. In combination with the sand cylinder and shaft of a wood polishing machine, a through shaft A carrying the cylinder bearings

and the arms B, and set-screws for adjustably supporting the ends of the shaft, substantially as set forth. 2nd. In combination, with the sand cylinder and shaft, the through shaft A, frame E having a stud-pin D, and the adjustable slotted arm C regulating the position of the cylinder, substantially as set forth. 3rd. In combination, with the sand cylinder G₁ and shaft G, the through shaft A, adjustable arms B, swinging arms C, and slotted frame E, whereby the ends of the shaft A can be independently adjusted, and both ends of the sand cylinder can be equally and simultaneously moved, substantially as set forth. 4th. In combination, with the sand cylinder, and shaft G, the vertically adjustable frame E, arm C, bar C₂, and sleeve C₃ threaded thereon, and confined so as to have only a motion of rotation, substantially as set forth. 5th. In combination, with the sand cylinder and shaft G, the vertically adjustable frame E, arm C, rod C₂, sleeve C₃ confined to the main frame, and hand wheel C₇, substantially as set forth. 6th. In combination, with the sand cylinder, and sand guard or table F, adjusting bar F₂ arranged to support the table between its ends, and strut F₁ supporting said bar adjustably, substantially as set forth. 7th. In combination, with the sand cylinder, main frame, and sand guard or table F, the adjustable supporting bolt F₉, and locking bolt F₈, substantially as set forth. 8th. In combination, with the table or sand guard F independently adjustable at each end, the sand cylinder G independently adjustable at each end, and also simultaneously adjustable at both ends substantially as set forth. 9th. In combination, with the sand cylinder and shaft G, the eccentric H, shaft H₁, and sleeve I, and arm I, which receive a reciprocating movement from the eccentric and impart it to the cylinder, substantially as set forth. 10th. In combination, with the sand cylinder and shaft G, the eccentric H, shaft H₁, frame H₂, arm I, sleeve I, and rings I₃, substantially as set forth. 11th. In a machine, substantially such as shown, the combination, with a sand cylinder, of a sand guard or table F, slotted to receive the periphery of the sand cylinder, and adjustably supported at the corners, and intermediately, so as to permit its vertical adjustment and also maintain it rigidly in plane, substantially as set forth. 12th. The screws, if passing through the pressure frame, and down into a hole in the main frame, and pin x extending down from the pressure frame into the main frame serving as a guide pin to support the screw against transverse strain, substantially as set forth.

No. 32,169. Mechanical Movement.*(Embrayage à friction.)*

The Judson Pneumatic Street Railway Company, (assignee of Whitcomb L. Judson), Minneapolis, Minn., U.S., 30th August, 1889; 5 years.

Claim.—1st. The combination of cylindrical-drum and friction wheel devices, capable of angular engagement with each other, there being one device of one kind and two of the other, and the angles of engagement variable at will, whereby the rotation of the device or devices of one kind gives a rectilinear movement, the speed of which is proportionate to the angle of engagement to such of the other as are engaged thereby, substantially as described. 2nd. The combination of cylindrical drum and friction wheel devices capable of angular engagement with each other, there being one device of one kind and two of the other, such as are employed of one kind, being mounted in fixed and such as are employed of the other in movable supports, substantially as described. 3rd. The combination, with a cylindrical driving drum, of two friction wheels capable of angular engagement therewith, the said wheels being mounted in movable bearings, whereby their angles of engagement with said drum may be varied, substantially as described. 4th. The combination with a cylindrical driving drum mounted in fixed supports, of two friction wheels capable of angular engagement therewith on opposite sides, said wheels being mounted in a movable support, and in movable bearings in said support, substantially as described.

No. 32,170. Solar Bath. (Bain solaire.)

Samuel D. Evans, Asbury Park, and Robert E. Smith, Westfield, N.J., U.S., 30th August, 1889; 5 years.

Claim.—A solar bath comprising a casing or cabinet having a detachable front frame, and glass panel, and frames and reflector-surfaces hinged to said front frame, and adapted to be turned down upon the glass panel, substantially as herein set forth.

*CERTIFICATES OF THE PAYMENT OF FEES FOR FURTHER TERMS HAVE BEEN ATTACHED TO
THE FOLLOWING PATENTS.*

1510. G. S. BRUSH, 3rd 5 years of No. 10,328, from the seventh day of August, 1889. Improvements on Stone Crushers, 1st August, 1889.
1511. J. F. ROSS, 2nd 5 years of No. 20,002, from the sixteenth day of August, 1889. Improvements on Sheet Metal Plugs for Metal Vessels or Packages, 1st August, 1889.
1512. J. BENNETT, 2nd 5 years of No. 19,952, from the fourth day of August, 1889. Improvements on Thrashing Machines, 1st August, 1889.
1513. P. MANHÉS, 2nd 5 years of No. 20,224, from the nineteenth day of September, 1889. Improvements in Converting Furnaces, 2nd August, 1889.
1514. W. TOWNSEND and THE ONTARIO FIRE PROTECTION CO., 3rd 5 years of No. 10,333, from the seventh day of August, 1889. Improvements in Pumps of the Class known as Submerged Pumps, 7th August, 1889.
1515. S. BAKER, 2nd 5 years of No. 20,289, from the thirtieth day of September, 1889. Improvements on Whips, 8th August, 1889.
1516. E. H. KEATING, 2nd 5 years of No. 20,106, from the second day of September, 1889. Improvements in Apparatus for Removing Incrustations, Sediment, or Deposits of any Kind, from the Water Pipes or Mains, 8th August, 1889.
1517. J. B. ARMSTRONG, 2nd 5 years of No. 20,130, from the fourth day of September, 1889. Improvements in Buggy or Carriage Gears, 9th August, 1889.
1518. J. B. ARMSTRONG, 2nd 5 years of No. 20,131, from the fourth day of September, 1889. Improvements in Buggy or Carriage Gears, 9th August, 1889.
1519. J. H. RUSSELL and J. T. KENNEDY, 2nd 5 years of No. 19,997, from the fifteenth day of August, 1889. Improvements in Snow Ploughs, 10th August, 1889.
1520. E. GURNEY, 2nd 5 years of No. 20,029, from the eighteenth day of August, 1889. Improvements in Steam and Water Boilers for Household Heating Purposes, 10th August, 1889.
1521. J. M. CAPELL and G. S. MACBEAN, 2nd 5 years of No. 20,026, from the eighteenth day of August, 1889. Improvements in Fans, 13th August, 1889.
1522. W. GOWEN, 2nd 5 years of No. 19,994, from the fifteenth day of August, 1889. Improvements in Saw Mill Dogs, 13th August, 1889.
1523. E. THOMSON, 2nd 5 years of No. 19,995, from the fifteenth day of August, 1889. Improvements in Electric Lamps, 14th August, 1889.
1524. E. THOMSON, 2nd 5 years of No. 20,054, from the twentieth day of August, 1889. Improvements in Electric Lamps, 14th August, 1889.
1525. THE FEED WATER HEATER CO., 2nd 5 years of No. 20,004, from the sixteenth day of August, 1889. Improvements on Feed Water Heaters, 14th August, 1889.
1526. C. W. and A. S. GAGE, 2nd 5 years of No. 20,025, from the eighteenth day of August, 1889. Improvements on Machinery for Sawing Lumber, 14th August, 1889.
1527. W. LOCKWOOD, 2nd 5 years of No. 20,011, from the sixteenth day of August, 1889. Improvements in Buck-board Waggon, 14th August, 1889.
1528. J. J. CALLOW, 2nd 5 years of No. 20,003, from the sixteenth day of August, 1889. Improvements in the Use and Manufacture of Stencil Plates for Graining and Imitating Woods, Marbles, etc., 15th August, 1889.
1529. THE DETROIT SPIRAL TUBE COMPANY, 2nd 5 years of No. 19,973, from the fifteenth day of August, 1889. Improvements on Manufacturing Sheet Metal Tubes or Cylinders, 15th August, 1889.
1530. THE STANDARD ELECTRICAL WORKS, 2nd 5 years of No. 20,031, from the eighteenth day of August, 1889. Improvements in Telephone Switch Boards, 16th August, 1889.
1531. THE WESTERN ELECTRIC COMPANY, 2nd 5 years of No. 20,079, from the 29th day of August, 1889. Improvements in Multiple Switch Board Apparatus, 16th August, 1889.
1532. F. L. PERRY, 2nd 5 years of No. 20,156, from the eighth day of September, 1889. Improvements in Two-Wheeled Vehicles, 16th August, 1889.
1533. I. P. WICKERSHAM, 2nd 5 years of No. 20,280, from the 29th day of September, 1889. Improvements in Injectors, 21st August, 1889.
1534. B. and W. J. GREEN, 2nd 5 years of No. 20,212, from the eighteenth day of September, 1889. Improvements in Washing Machines, 22nd August, 1889.
1535. THE LEDUC TUBE IMPROVEMENT COMPANY, 2nd 5 years of No. 20,171, from the twelfth day of September, 1889. Improvements in Life Preservers, 23rd August, 1889.
1536. THE ONTARIO HEDGE AND WIRE CO., 2nd 5 years of No. 20,561, from the twelfth day of November, 1889. Improvement for Driving Staples, 23rd August, 1889.
1537. F. LONGTIN, 2nd 5 years of No. 20,082, from the twenty-ninth day of August, 1889. Improvements in Pumps for Artesian Wells, 24th August, 1889.
1538. J. M. SMITH, 2nd 5 years of No. 20,501, from the fourth day of November, 1889. Improvements in Governors for Steam Engines, 24th August, 1889.
1539. L. J. WING, 2nd 5 years of No. 20,358, from the tenth day of October, 1889. Improvements in Ventilating Apparatus, 24th August, 1889.
1540. A. WEBER and H. W. ROOD, 2nd 5 years of No. 20,269, from the twenty-sixth day of September, 1889. Improvements on Straight-Way Valve Cases, 26th August, 1889.
1541. A. WEBER and H. W. ROOD, 2nd 5 years of No. 20,276, from the twenty-sixth day of September, 1889. Improvements on Crank Pin Oilers, 26th August, 1889.
1542. A. WEBER, 2nd 5 years of No. 20,277, from the twenty-sixth day of September, 1889. Improvements on Displacement Lubricators, 26th August, 1889.
1543. A. WEBER and H. W. ROOD, 2nd 5 years of No. 20,278, from the twenty-sixth day of September, 1889. Improvements on Chucks for Holding Grate Valves, 26th August, 1889.
1544. A. WEBER and H. W. ROOD, 2nd 5 years of No. 20,435, from the twenty-seventh day of October, 1889. Improvements on Rotary Sprinklers, 26th August, 1889.
1545. A. WEBER and H. W. ROOD, 2nd 5 years of No. 20,436, from the twenty-seventh day of October, 1889. Improvements on Fountain Tips, 26th August, 1889.
1546. A. WEBER and H. W. ROOD, 2nd 5 years of No. 20,719, from the thirteenth day of December, 1889. Improvements on Straight-Way Valves, 26th August, 1889.
1547. J. ABELL, 2nd 5 years of No. 20,112, from the third day of September, 1889. Improvements in Straw Lurning Furnaces, 30th August, 1889.
1548. E. THOMSON, 2nd 5 years of No. 20,089, from the first day of September, 1889. Improvements in Electric Commutators or Switches, 30th August, 1889.
1549. E. THOMSON, 2nd 5 years of No. 20,781, from the twenty-second day of December, 1889. Improvements in Safety Devices for Electric Arc Lamps, 30th August, 1889.

AUGUST LIST OF TRADE MARKS.

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- 3506 } STAPLEY & SMITH, of 128 London Wall, London, England. Articles of Clothing,
3507 } including ladies' and children's underclothing, 5th August, 1889.
3508 }
3509. THE J. C. AYER CO., of Lowell, Massachusetts, U.S.A. Medical Compounds, 7th August, 1889.
3510. THE J. C. AYER CO., of Lowell, Massachusetts, U.S.A. Medical Compounds, and especially medicines for Malarial diseases, 7th August, 1889.
3511. THE J. C. AYER CO., of Lowell, Massachusetts, U.S.A. Toilet Preparations, 7th August, 1889.
3512. THE J. C. AYER CO., of Lowell, Massachusetts, U.S.A. Medical Compounds, and especially medicines for Throat and Pulmonary diseases, 7th August, 1889.
3513. GIANT CHEMICAL CO., of Philadelphia, Pennsylvania, U.S.A. A Salve for the removal or treatment of corns, and bunions, 12th August, 1889.
3514. THOMAS MYERS AND COMPANY, of Liverpool, England. General Trade Mark, 13th August, 1889.
3515. FRED. PACKARD and FRED. FOREST FIELD, of Boston, Massachusetts, U.S.A. Boots, Shoes and Slippers of all kinds, 13th August, 1889.
3516. UPPER ASSAM TEA COMPANY, LIMITED, No. 2, East India Avenue, and No. 12, Bishopsgate Avenue, Camomile Street, London, England. Tea, 13th August, 1889.
3517. WELLAND VALE MANUFACTURING COMPANY, of St. Catharines, Ont. Axes, 16th August, 1889.
3518. JOSEPH READ AND COMPANY, of Stonehaven, N.B. Grindstones, Soythe, Oil and Whetstones, 17th August, 1889.
3519. BOLT and COMPANY, of Montreal, Que. Rolled Gold Plate Chains, 17th August, 1889.
3520. THE WILLIAM JOHNSON COMPANY, of Montreal, Que. Paints and Colors, 17th August, 1889.
3521. JOSEPH MIZAIL FORTIER, of Montreal, Que. Cigars, 17th August, 1889.
3522. S. DAVIS AND SONS, of Montreal, Que. Cigars, Cigarettes and Tobaccos, 17th August, 1889.
3523. SHATFORD BROS. of Halifax, N.S. Illuminating oil, 17th August, 1889.
3524. I. HARRIS AND SON, of Montreal, Que., Cigars, 24th August, 1889.
3525. JOHN ATWATER WILKINSON, of Toronto, Ont. Indian Woman's Balm or Par-turient Panacea, 24th August, 1889.
3526. THOMAS DARLING, of Montreal, Que., in his capacity of Secretary to the WHITE LEAD ASSOCIATION OF CANADA. White Lead Paint, 24th August, 1889.
- 3527 } THE "MERCURY" TYPE WRITING MACHINE CO., L'D., of No. 1, Furnival St.
3528 } Holborn, London, England. Paper, Stationery, including Pens,
Bookbinding, Playing Cards and Type Writers, 26th August, 1889.
3529. BAGOTS, HUTTON AND COMPANY, of 27 and 28 William St., Dublin, Ireland, Whiskey and other Spirits and Fermented Liquors, 26th August, 1889.
- 3530 } WILLIAM MITCHELL, of 13 and 14 Cumberland St., Birmingham, Warwickshire,
3531 } and 44 Cannon St., London, England. General Trade Marks, 26th August, 1889.
3532. JOHN POWER & SON, of John's Lane Distillery, Dublin, Ireland. Whiskey and other Spirits and Fermented Liquors, 26th August, 1889.
3533. HEPTON BROTHERS, of Leeds, England. Waterproof Material, 27th August, 1889.
3534. THE AMERICAN WATCH CASE COMPANY, LIMITED, of Toronto, Ont. Watch Cases, 28th August, 1889.
3535. EGBERT WARREN GILLET, of Chicago, Illinois, U.S.A. Dry Hop Yeast, 28th August, 1889.
3536. J. UNDERWOOD & CO., of New York, U.S.A. Ribbons for Type Writing Machines, 29th August, 1889.

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4973. A CROOKED PATH, by Mrs. Alexander (book). The National Publishing Co., Toronto, Ont., 1st August, 1889.
4974. JEZEBEL'S FRIENDS, by Dora Russell. (book). John Lovell & Sons, Montreal, Que., 1st August, 1889.
4975. LE COMMERCE DE MONTREAL ET DE QUEBEC ET LEURS INDUSTRIES, (book). James Joseph Kane, Montreal, Que., 1st August, 1889.
4976. THE TOCSIN. No. 1. Call Yes for Men. Words by L. A. Morrison. Music by Clarence Lucas. Llewelly A. Morrison, Toronto, Ont., 2nd August, 1889.
4977. ENGLISH LITERATURE FOR 1889-90. Byron., by J. E. Wetherell, B.A., and Addison by F. H. Sykes, M.A. W. J. Gage & Co, Toronto, Ont., 3rd August, 1889.
4978. NORMAN'S CALENDAR. Addison Norman, Toronto, Ont., 7th August, 1889.
4979. SHINING LIGHTS, by Rev. Albert Sims, Otterville, Oxford County, Ont., 8th August, 1889.
4980. ACCIDENT COUPON POLICY (policy form). Gerald E. Hart, Montreal, Que., 8th August, 1889.
4981. CHINOOK—AS SPOKEN BY THE INDIANS OF WASHINGTON TERRITORY, British Columbia and Alaska by Rev. C. M. Tate. M. W. Waitt, Victoria, B.C., 9th August, 1889.
4982. INTERIOR OF TRINITY CHURCH, ST. JOHN, N.B., (Photo). A. R. Wilber, St. John, N.B., 9th August, 1889.
4983. SINKING FUND TABLES AND INSOLVENT TABLES. by Wm. Powis, F.C.A Toronto, Ont., 9th August, 1889.
4984. LAKE LYRICS AND OTHER POEMS, by Wm. Wilfred Campbell, St. Stephen, N.B., 9th August, 1889.
4985. THE VANCOUVER AND BRITISH COLUMBIA GUIDE. Hayley Pelham Judd, Vancouver, B.C., 17th August, 1889.
4986. THE TEACHER'S HAND BOOK OF THE TONIC SOL-FA SYSTEM OF MUSIC. The Canada Publishing Co., L'd., Toronto, Ont., 17th August, 1889.
4987. GRAMACHREE. (Sweetheart). Valse. by E. M. Vermilyea. Toronto, Ont., 17th August, 1889.
4988. A PETITION AND PRAYER IN BEHALF OF THE LOWER ANIMALS. Archibald McBean, Winnipeg, Man., 19th August, 1889.
4989. THAT OTHER WOMAN, by Annie Thomas (book). John Lovell & Son, Montreal, Que., 20th August, 1889.
4990. THE BRITISH COLUMBIA PROPERTY REGISTER, JULY, 1889. Frederick Paulino, Victoria, Vancouver Island, 21st August, 1889.
4991. PLAN OF THE TOWN OF PEMBROKE. James L. Morris, Pembroke, Ont., 21st August, 1889.
4992. THE ONTARIO REPORTS. Volume XVI. Containing Reports of Cases decided in the Queen's Bench, Chancery and Common Pleas, Divisions of the High Court of Justice for Ontario. Editor: James F. Smith, Q.C. Reporters: Queen's Bench Division, E. B. Brown; Chancery Division, A. H. F. Letroy, George A. Booner; Common Pleas Division, George F. Harman; Barristers-at-Law. The Law Society of Upper Canada, Toronto, Ont., 22nd August, 1889.
4993. MAGIC MEDICINE GUIDE (book). Wm. B. Soper, London, Ont., 24th August, 1889.
4994. EXAMINATION QUESTIONS AND ANSWERS ON CRIMINAL LAW. by Henry Newbolt Roberts, Toronto, Ont., 24th August, 1889.
4995. CANADIAN SCORE BOOK. J. & A. McMillan, St. John, N.B., 26th August, 1889.
4996. MAROONED, by W. Clarke Russell (book). The National Publishing Co., Toronto, Ont., 26th August, 1889.
4997. TRUST. Song. Words by Frances Ridley Havergal. Music by W. O. Forsyth. A. & S. Nordheimer, Toronto, Ont., 27th August, 1889.
4998. SWEET AND LOW. Words by Alfred Tennyson. Music by Clarence Lucas. A. & S. Nordheimer, Toronto, Ont., 27th August, 1889.

4999. MARITIME COURT, ONTARIO. General Rules (1889), and Statutes, with Forms, Table of Fees, etc., by Alfred Howell and Alexander Downey, Toronto, Ont., 28th August, 1889.
5000. BRYCE'S SOUVENIR GUIDE TO TORONTO. Toronto of To-day; with a glance at the past. by G. Mercer Adam. Wm. Bryce, Toronto, Ont., 28th August, 1889.
5001. ROLAND OLIVER. by Justin McCarthy, M.P. Wm. Bryce, Toronto, Ont., 28th August, 1889.
5002. THE TELEPHONE CHART. Henry Ryerson Harvy, Toronto, Ont., 29th August, 1889.



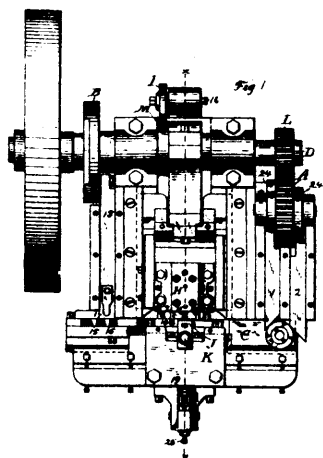
THE
CANADIAN PATENT OFFICE RECORD.

ILLUSTRATIONS.

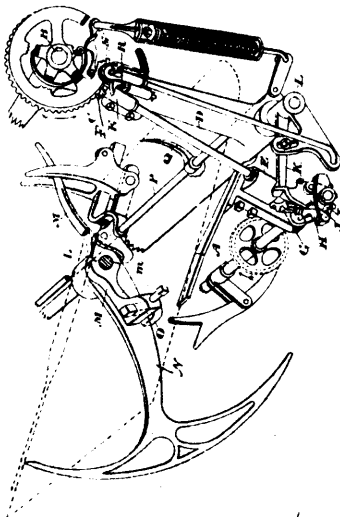
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AUGUST, 1889.

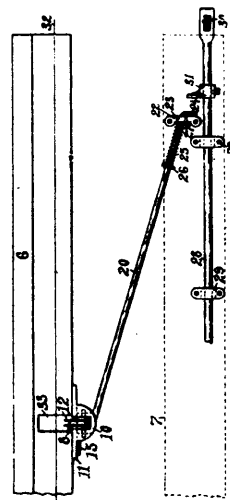
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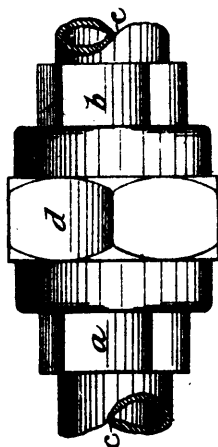
31845 Dunham's Nut Machine.



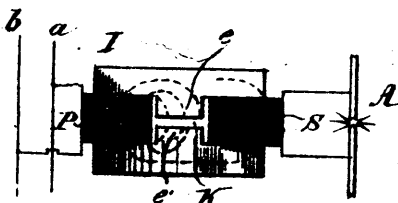
31846 Best's Harvester Binder.



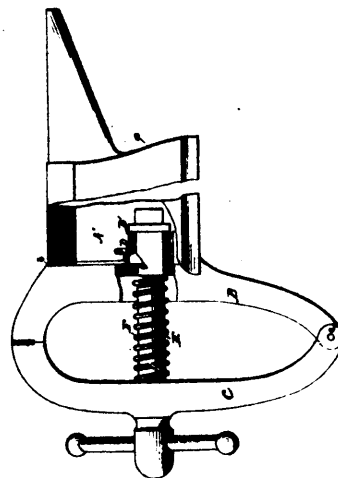
31847 Taylor & Saalfrank's Stop Motion



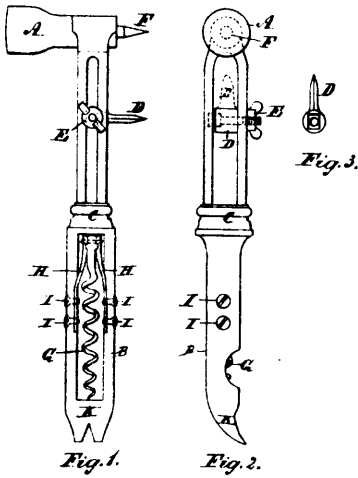
31848 Messinger's Pipe Coupling and Check Valve.



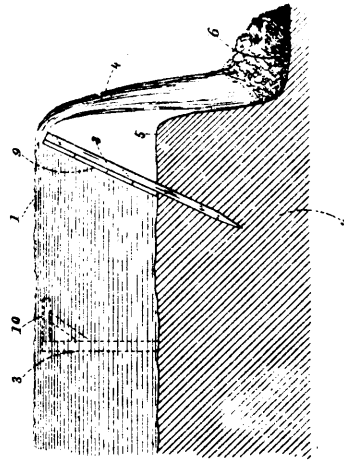
31849 Thomson's Apparatus for Regulating Current or Potential in Secondary of Transformers.



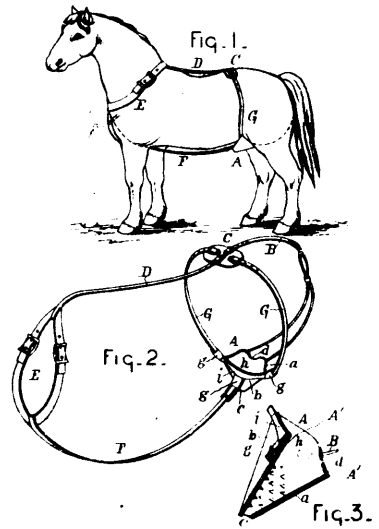
31850 Holt's Anvil and Vice Attachment.



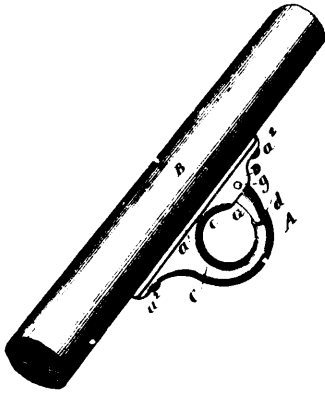
31851 Downend's Combination Tool.



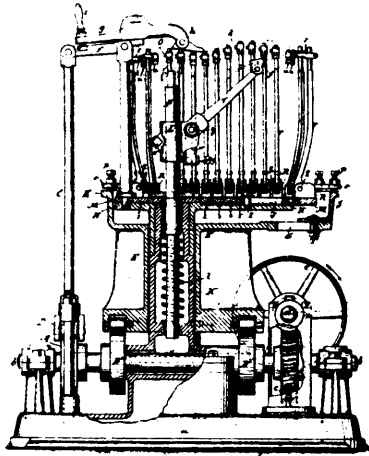
31852 Long's Hydraulic Excavating.



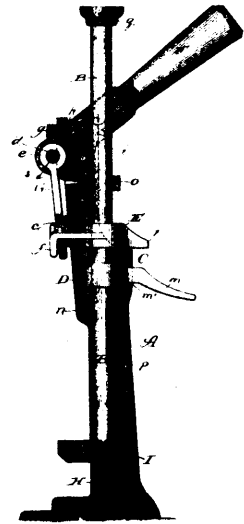
31853 Springsteen's Horse Shield.



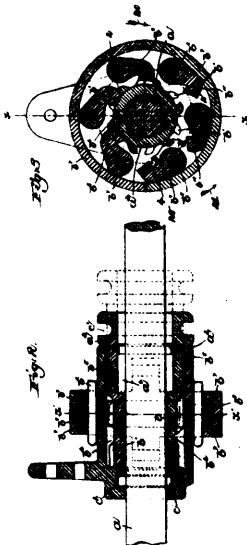
31854 Burk's Hold Back.



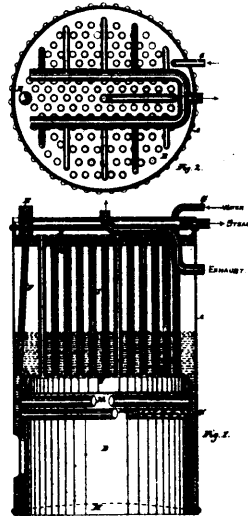
31855 Millet's Lasting Machine.



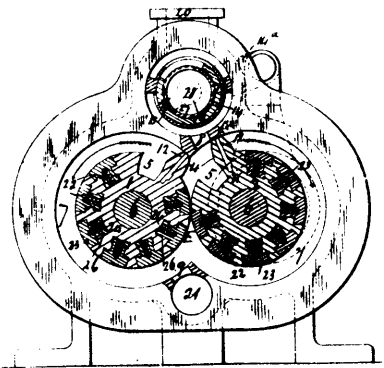
31856 Strom's Lifting Jack.



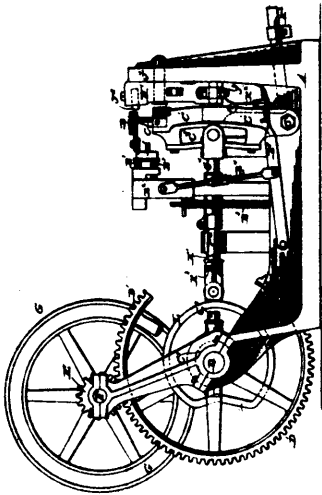
31857 Turner's Ratchet Clutch Mechanism.



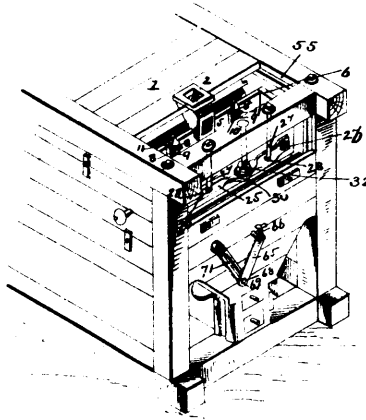
31858 Waterous' Upright Boiler.



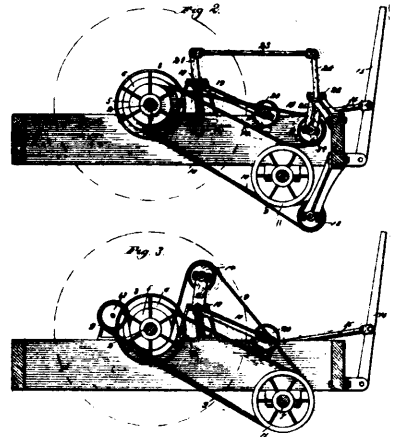
31859 Towison's Rotary Motor.



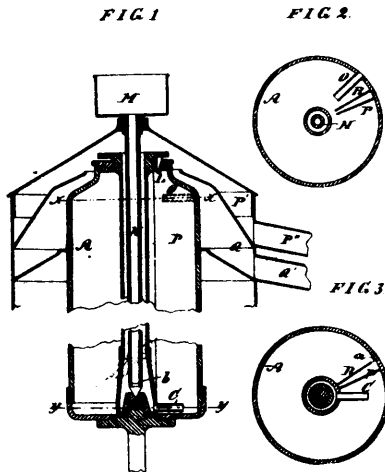
31860 Bettendorf's Machine for Securing Spokes.



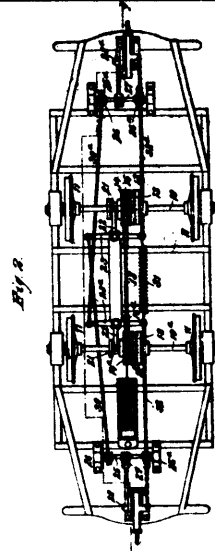
31861 Lucas' Flour Bolt.



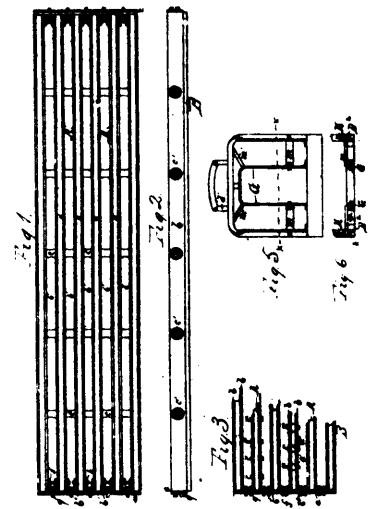
31862 Heacock's Saw Mill Feed Works.



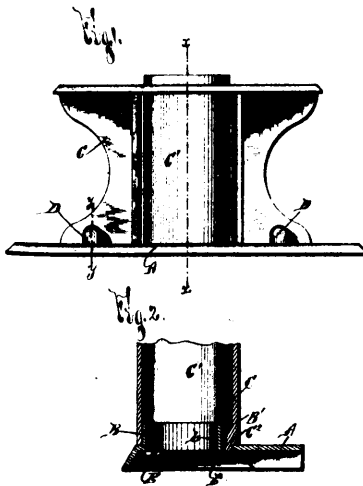
31863 Jonsson's Centrifugal Apparatus



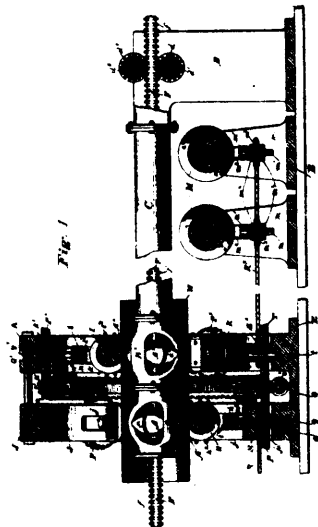
31864 Vereker & Yeates' Car Brake, etc.



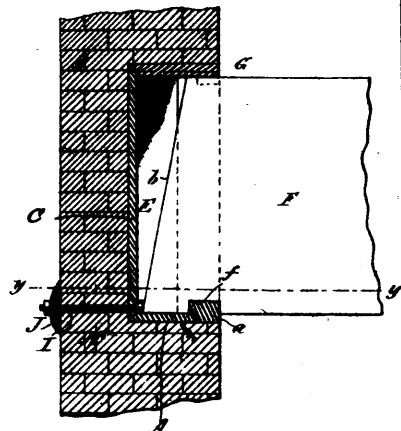
31865 Green & Murison's Railway Car.



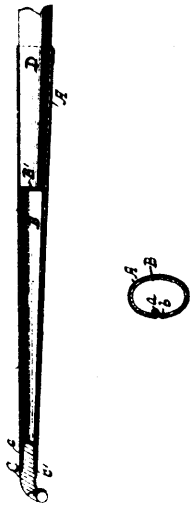
31866 Phillips' Range.



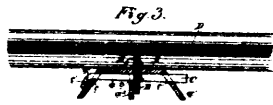
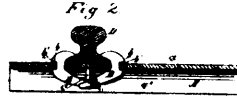
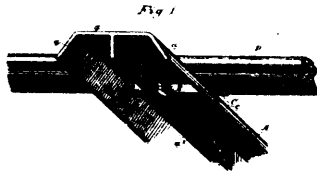
31867 Tasker's Rolling Mill.



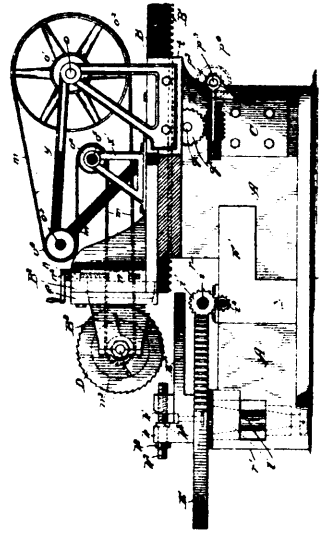
31868 Goets's Beam End Protector.



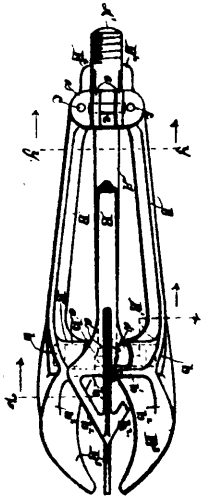
31869 Coss' Carriage Bow.



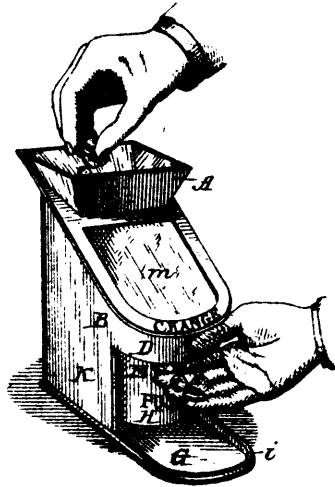
31870 Donaldson's Railway Tie.



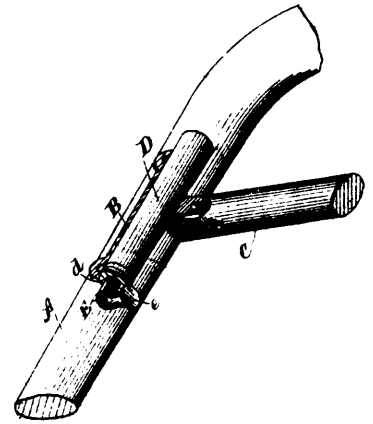
31871 Perkins' Rail Cutting Machine.



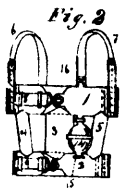
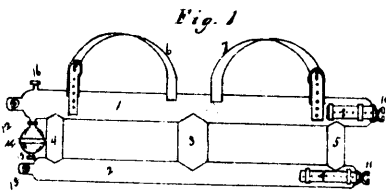
31872 Mead & Thomson's Flue Cleaner.



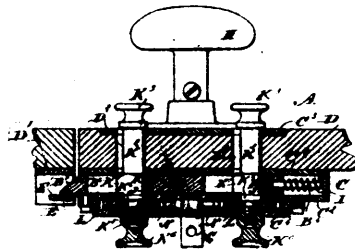
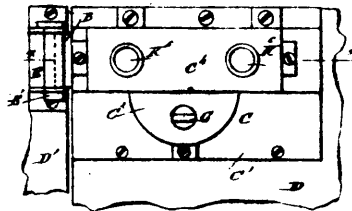
31873 Elah's Cash Delivering Device.



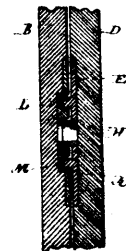
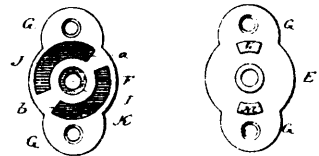
31874 Hilderbrand & Rost's Draft Spring.



31875 Pemberton's Life Saving Apparatus.



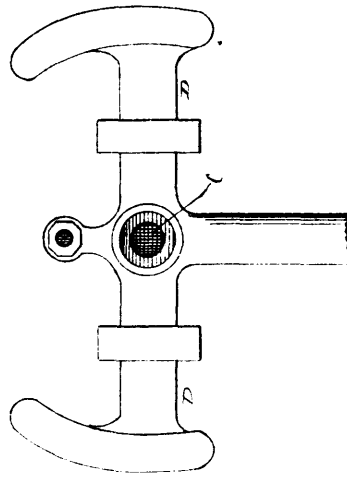
31876 Shaw's Combination Lock.



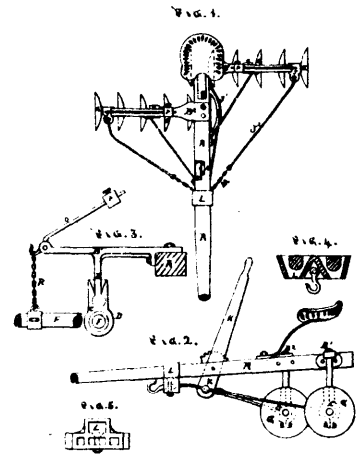
31877 Old's Joint for Folding Chairs



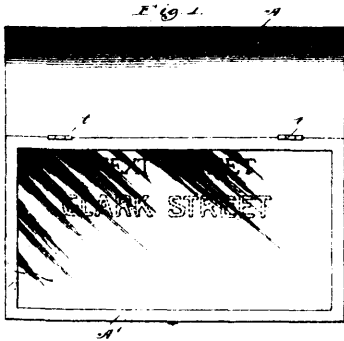
31878 Smith's Wax End Needle.



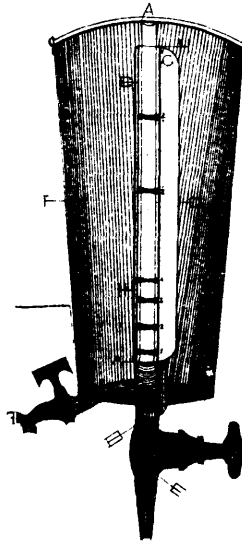
31878 Smith's Fifth Wheel, etc.



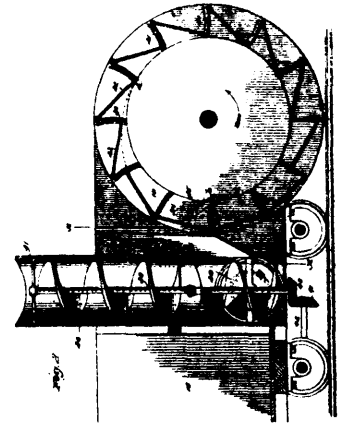
31880 Bellaire's Harrow.



31881 Williams' Street or Station Indicator.



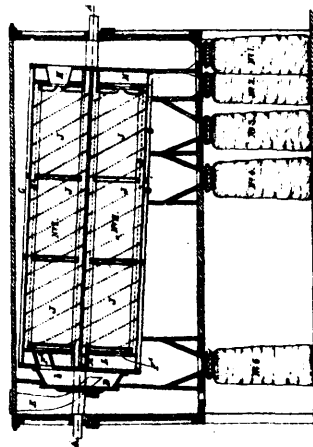
31882 Lusler's Liquid Counter.



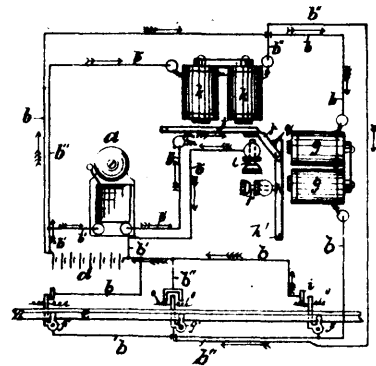
31883 Williams' Snow Plough.



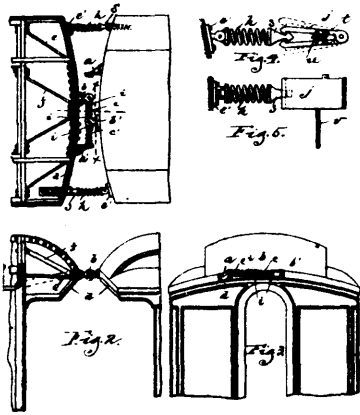
31884 Horton's Window Screen.



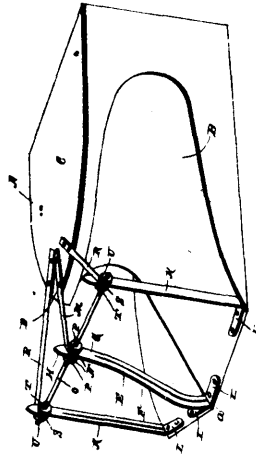
31885 Graspe's Machine for Sifting or Sorting Grain, etc.



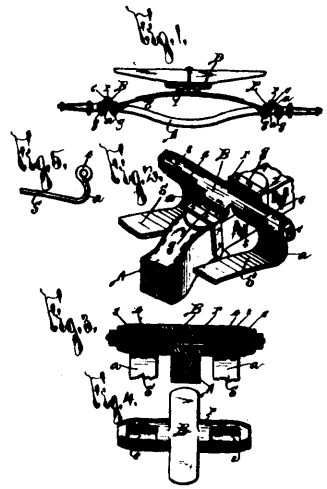
31886 Thompson's Railway Signal.



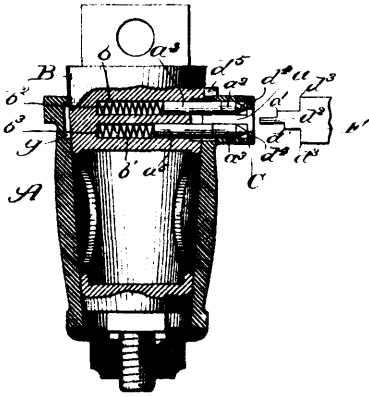
31887 Pullman's Rail Road Car.



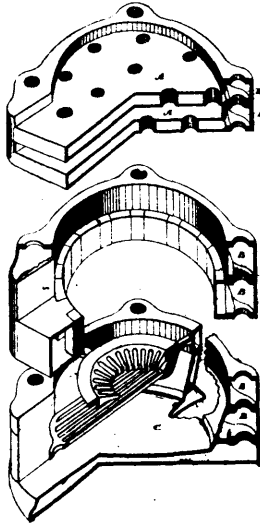
31888 Vincent's Snow Plough.



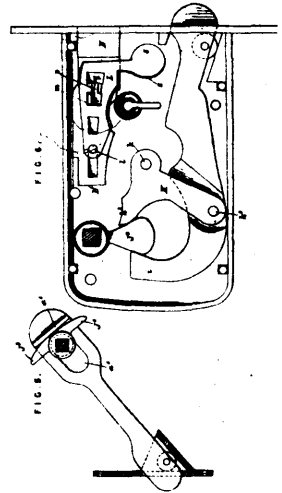
31889 Fell's Spring Vehicle.



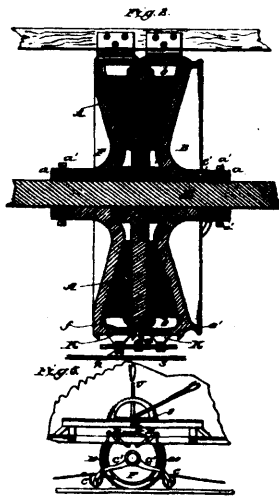
31890 Haines' Lock for Shut-Off Valves.



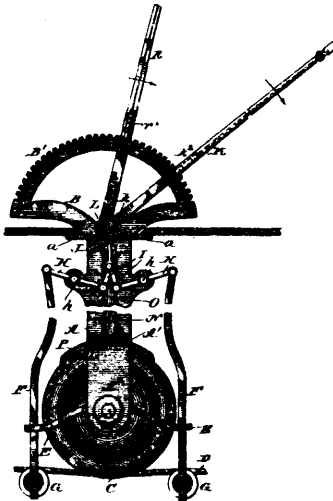
31891 Gurney's Hot Water Heater.



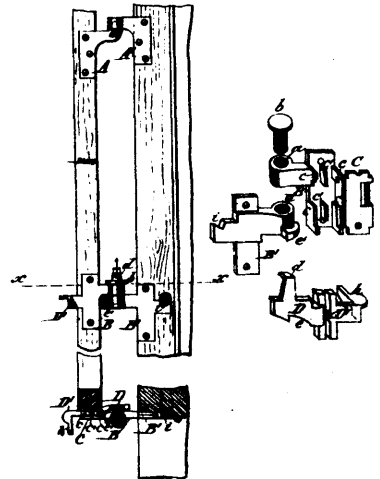
31892 Kneen's Lock and Latch.



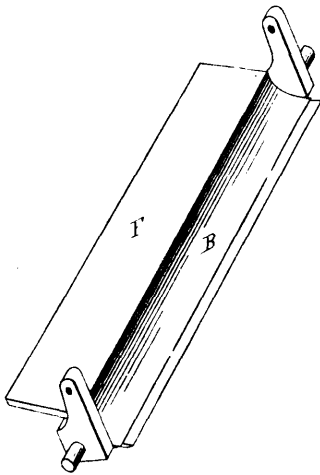
31893 Lemieux's Device for Transmitting Power



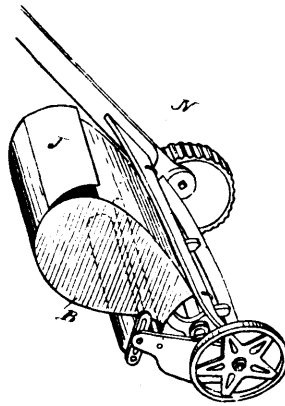
31894 Lemieux's Cable Grip.



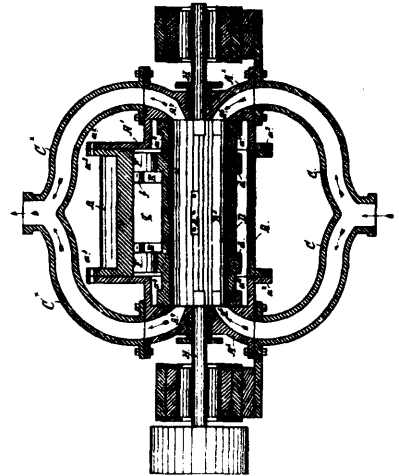
31895 Cutter's Combustion Lock Hinge.



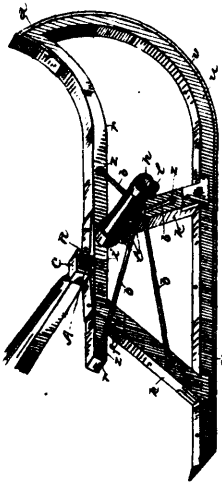
31896 DeLand's Attachment to Lawn Mowers.



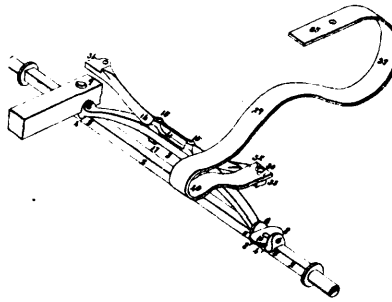
31897 DeLand's Attachment to Lawn Mowers.



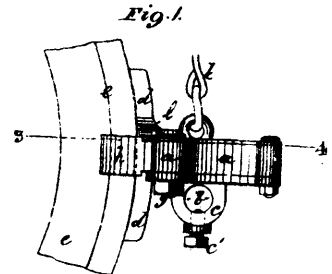
31898 Seifert's Rotary Pump.



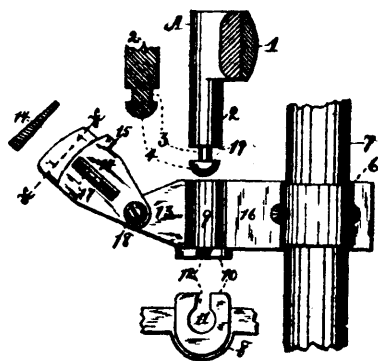
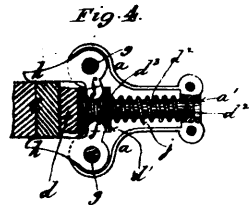
31899 Wveth's Sleigh Runner Attachment.



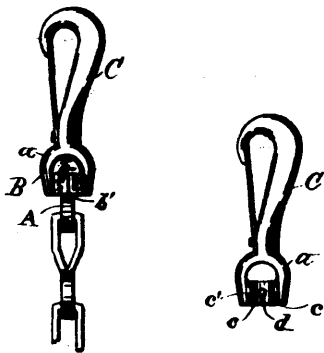
31900 Portmann's Spring Tooter Gear.



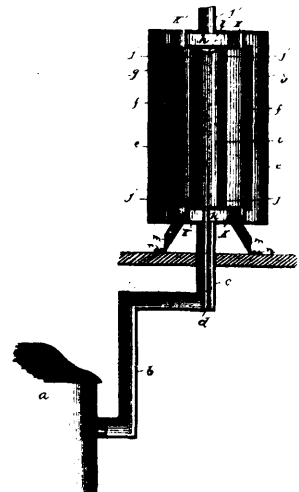
31901 Wilson's Brake.



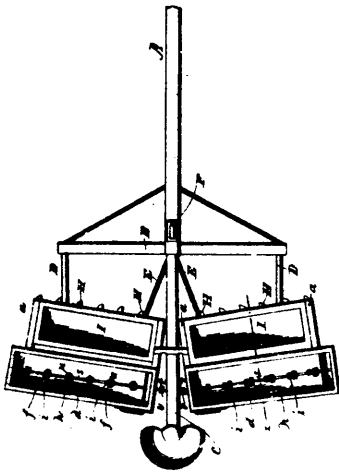
31902 Castle's Thrill Coupling.



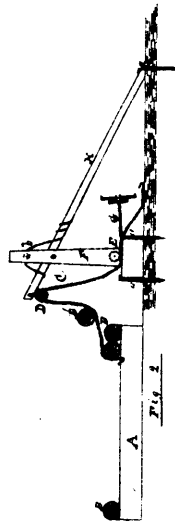
31903 Kelley's Swivel.



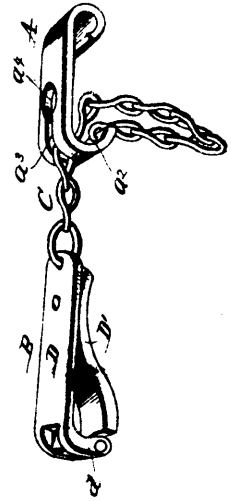
31904 Hodgkinson's Hot Air Drum.



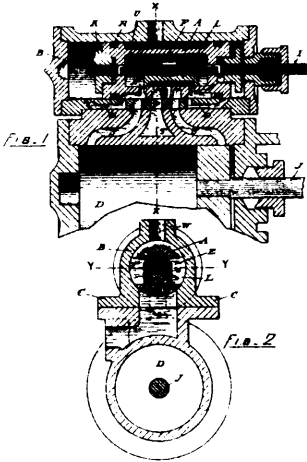
31905 Rogers & Kennedy's Seeding Attachment.



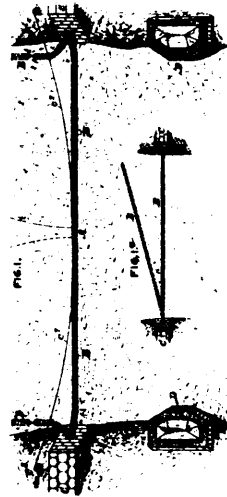
31906 Williams' Appliance for Skidding Logs.



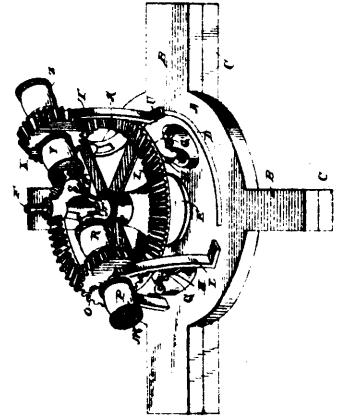
31907 McLeod's Hame Lock.



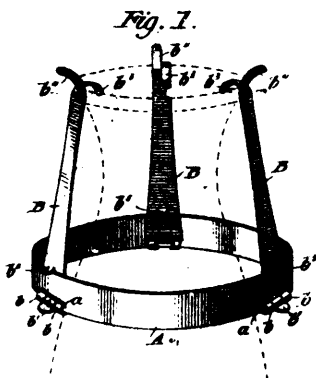
31908 Patten's Valve for Steam Pumps, etc.



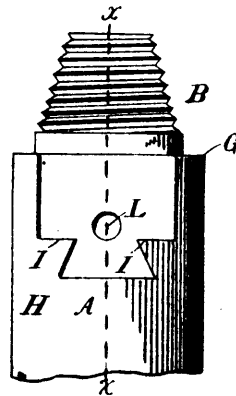
31909 Rattery's Boom.



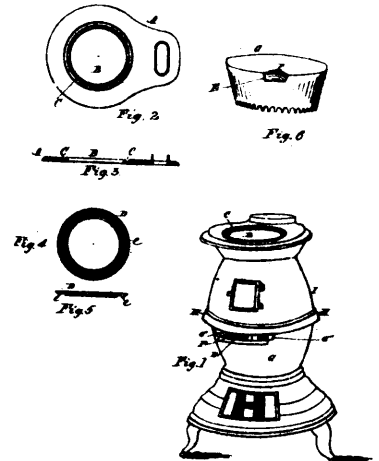
31910 Kinsey's Machine for Transmitting Motion



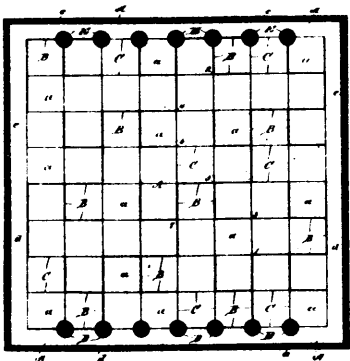
31911 Zinn's Heating Attachment.



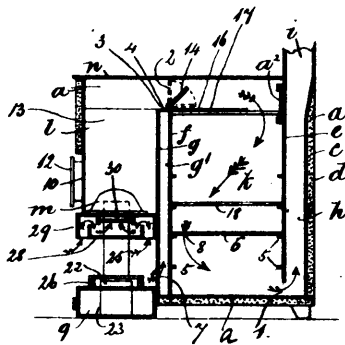
31912 McLane's Drilling Tool.



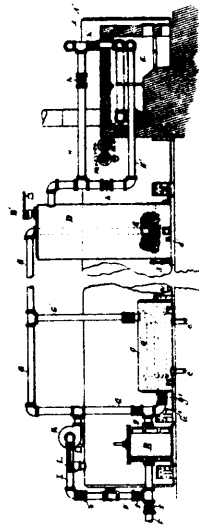
31913 Bogue's Stove



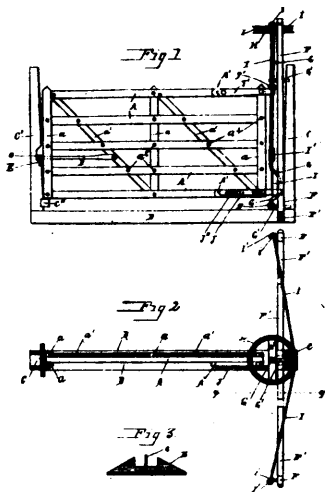
31814 Denham's Game.



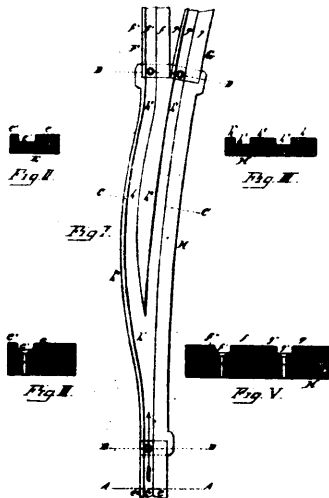
31815 Roberts' Coal Oil Stove.



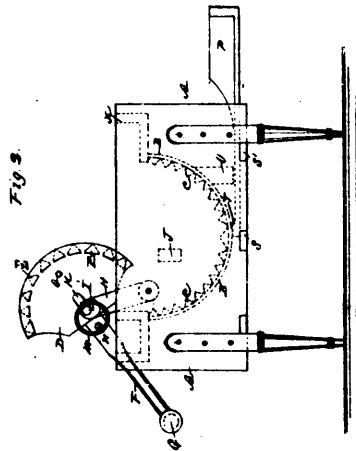
31816 Haskin's Method of Vulcanizing Wood.



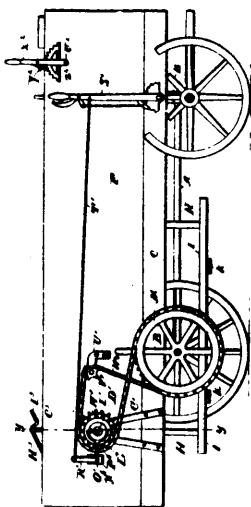
31817 Bauer's Gate.



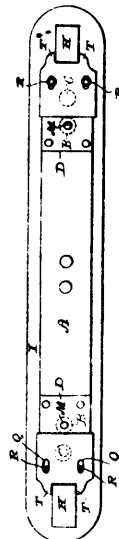
31818 Kelly's Railway Switch.



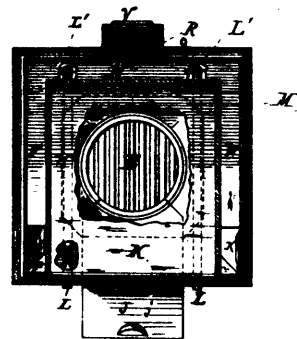
31819 Burke's Washing Machine.



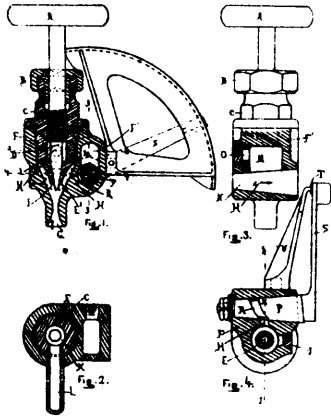
31820 Garst's Manure Distributer.



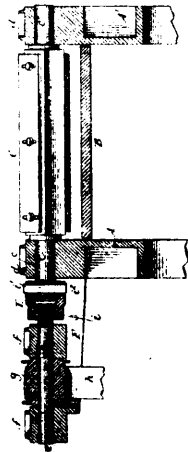
31821 Diehl's Vehicle Spring.



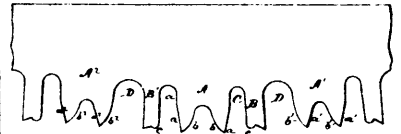
31822 Schmitt's Smoothing and Sad Iron Heater.



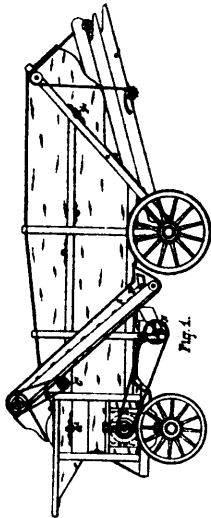
31923 Wright's Fluid Feeder.



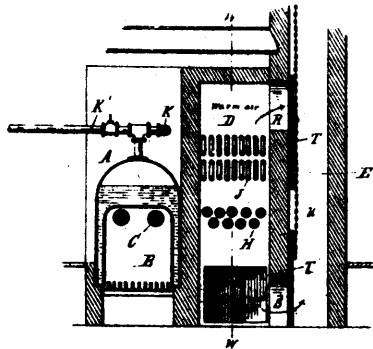
31924 Ross' Wood Planing Machine.



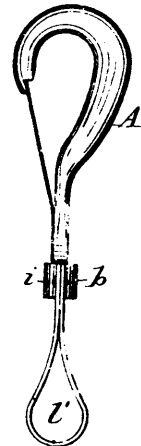
31925 Wilson's Saw.



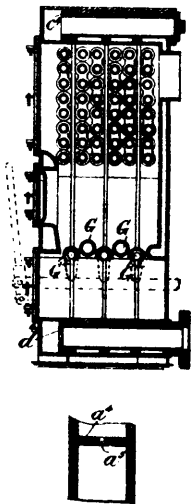
31926 Kleinstiver's Thrashing Machine.



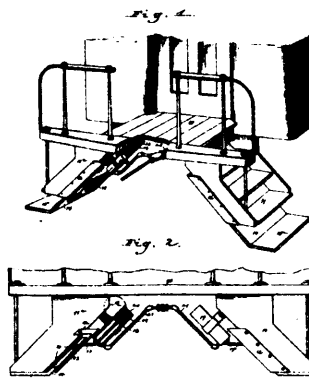
31927 Durham's Hot Air Furnace.



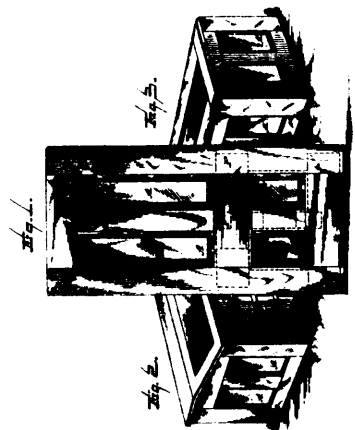
31928 Sears & Kelley's Swivel.



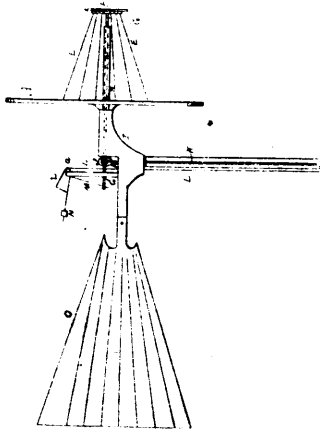
31929 Smith's Hot Water Furnace.



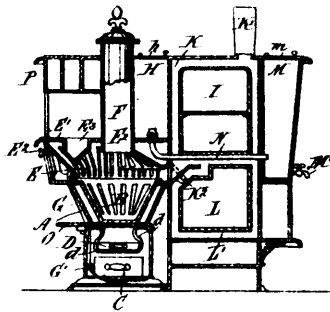
31930 Wood's Car Step.



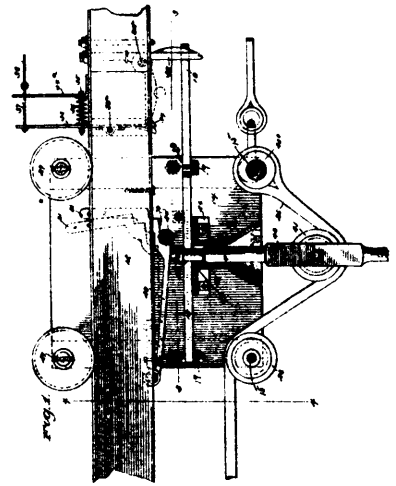
31931 Benedict's Panel.



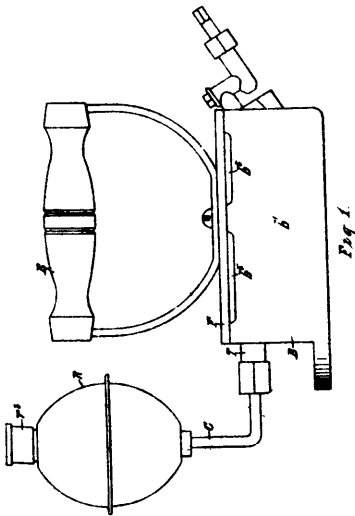
31932 Foster's Wind Mill.



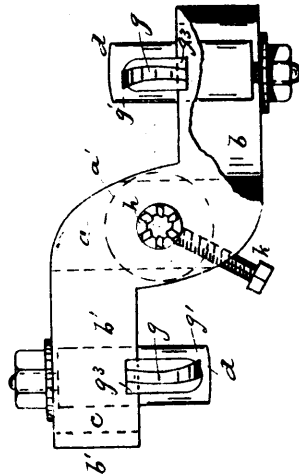
31933 Taylor's Stove.



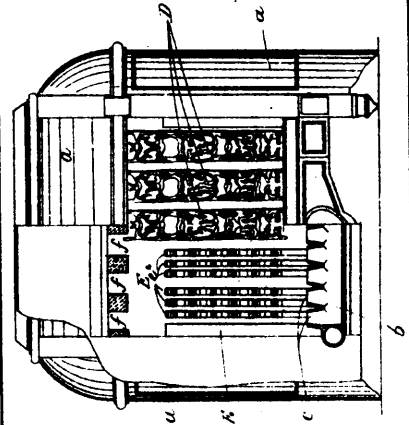
31934 Thomson's Suspended Railway.



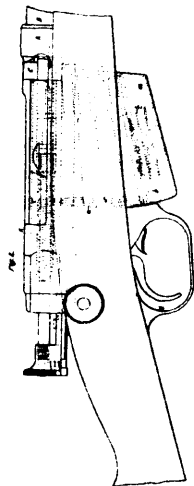
31935 Morrow & Curtis's Flat Iron.



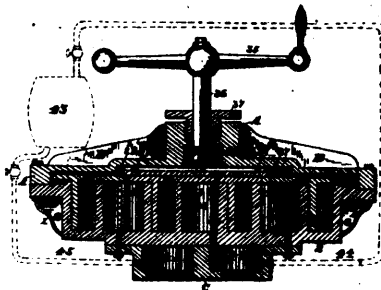
31936 Sullivan's Cutter Head.



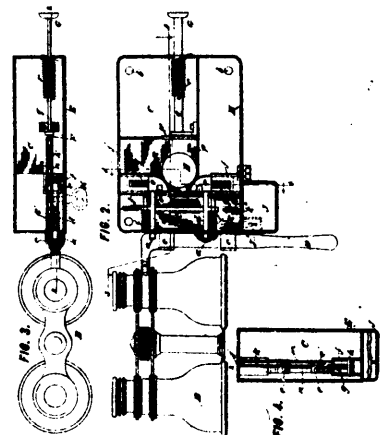
31937 Wright's Gas Fire Place.



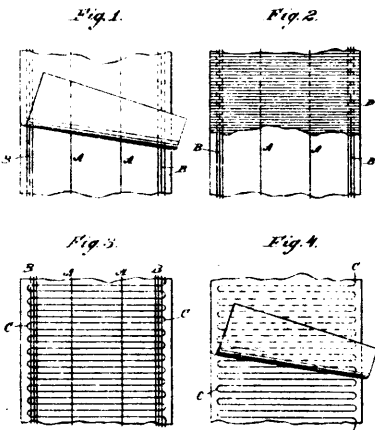
31938 Lee's Fire Arm.



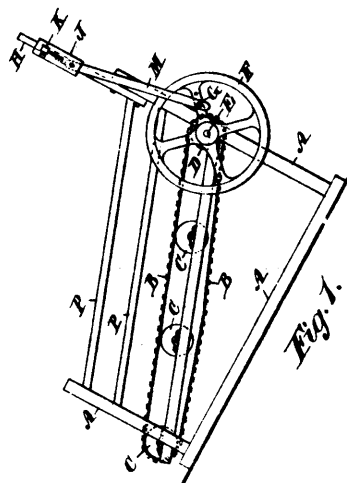
31939 Johnson's Steam Pump.



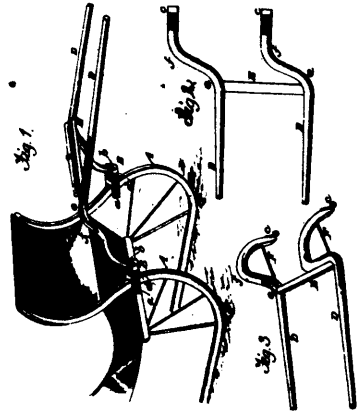
31940 Patterson's Apparatus for Renting Opera Glasses.



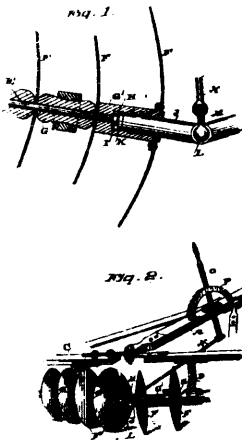
31942 Childs' Composite Fabric.



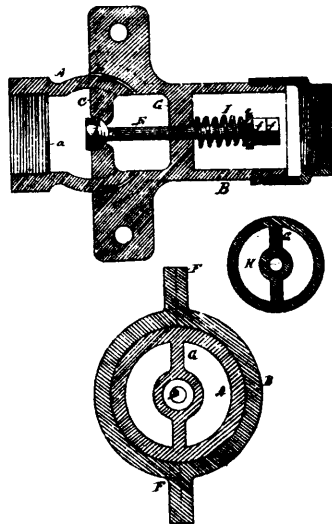
31943 Ormiston's Churn Dog Power.



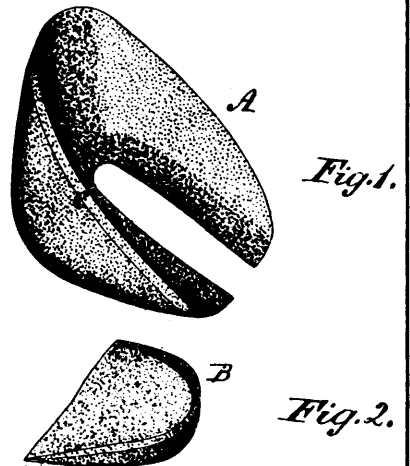
31944 Hynds' Vehicle Thill.



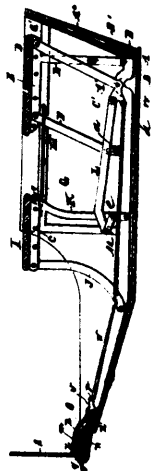
31945 Richards' Disk Harrow.



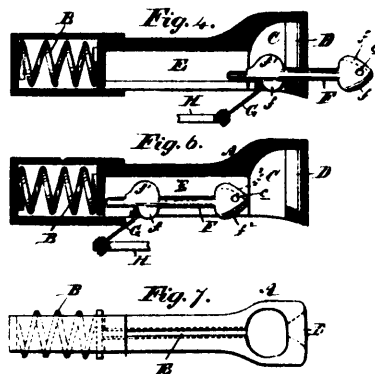
31946 Martin's Pipe Coupling.



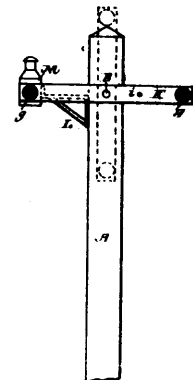
31947 Beacock's Heel Counter, etc.



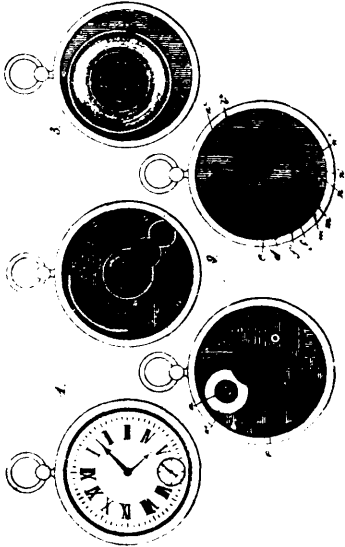
31948 Stratton's Vehicle.



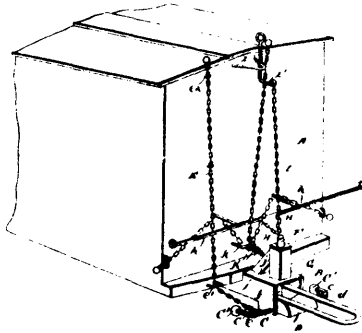
31949 Roberts' Car Coupling.



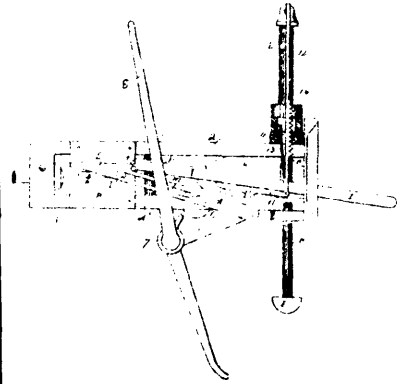
31950 Tisdale's Railway Signal.



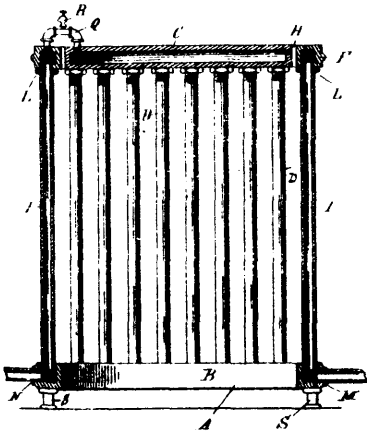
31951 Amaron's Watch.



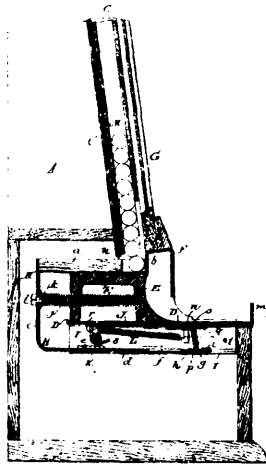
31952 Rogers' Car Coupling.



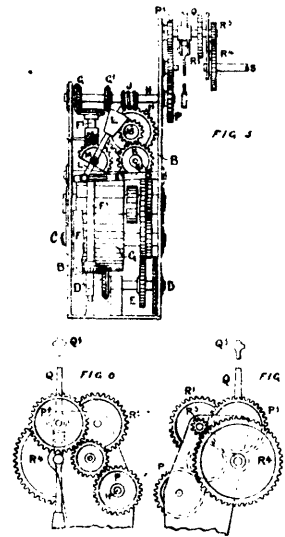
31953 Lehman & Herr's Car Coupling.



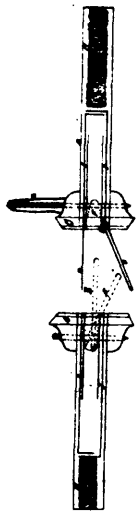
31954 Kennedy's Radiator.



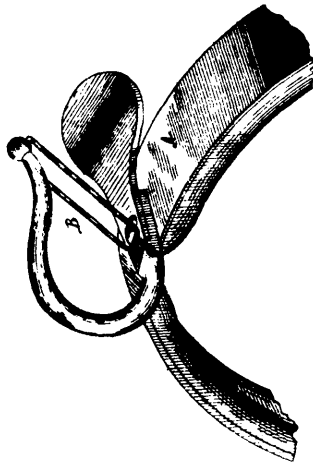
31955 Williams' Vending Apparatus.



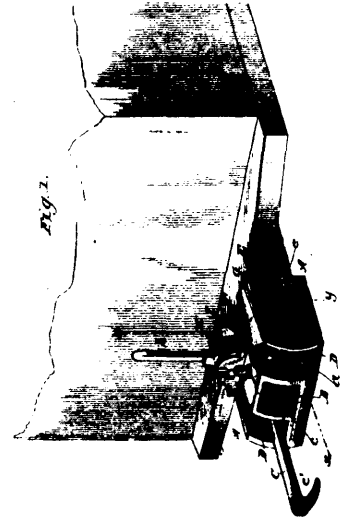
31956 Tetley's Mechanism for Turning over the Leaves of Books, etc.



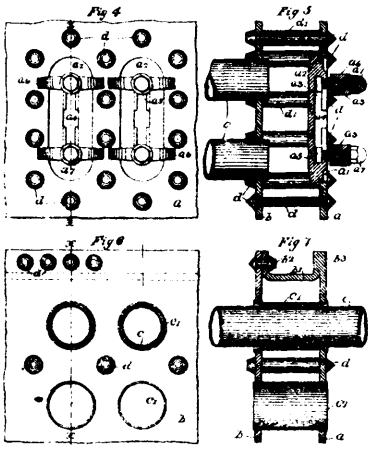
31957 Matheson's Device for Coupling Cars.



31958 Clarke's Check Hook.

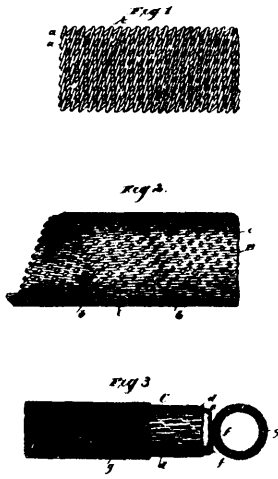


31959 Grisham's Car Coupling.

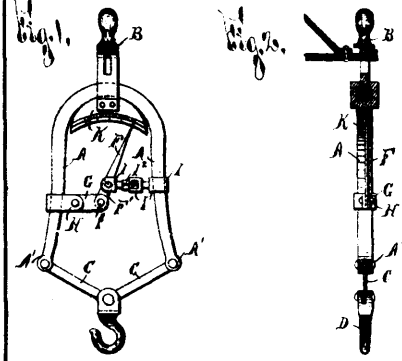


Patented in the Kingdom of Great Britain for the purpose of Invention on the 27th Decr 1888. Washington, D.C. Decr 12 1889.

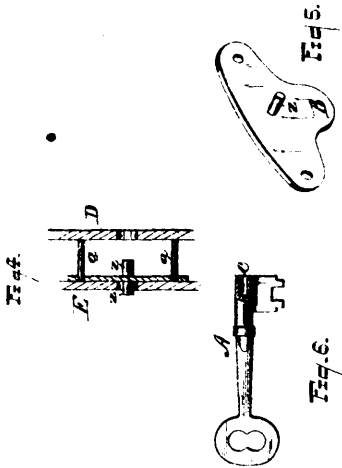
31960 Taylor's Steam Boiler.



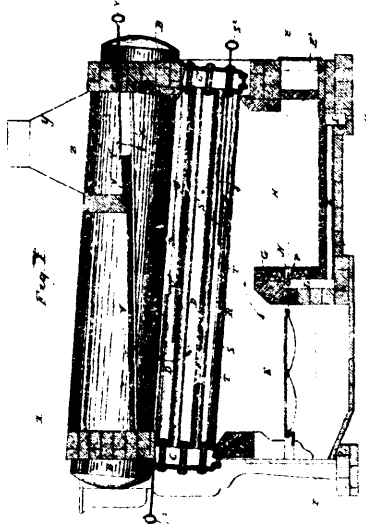
31961 Midgley's Hose or Tubing.



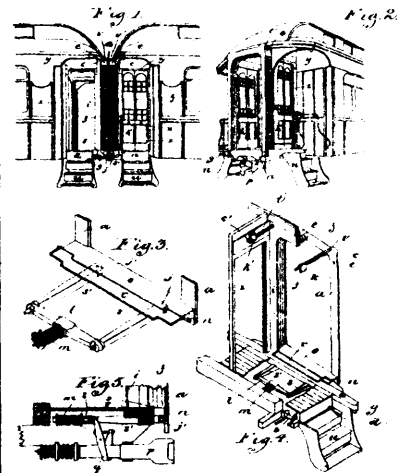
31962 Bergman's Spring Scale.



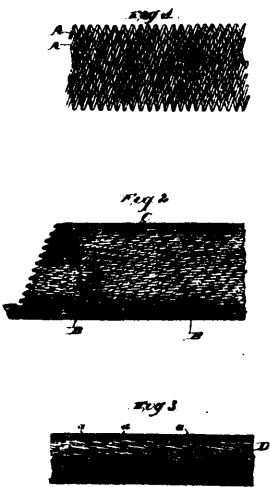
31963 Stoddard's Lock Case Attachment.



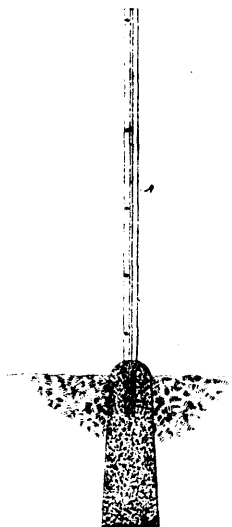
31964 Meier's Steam Generator.



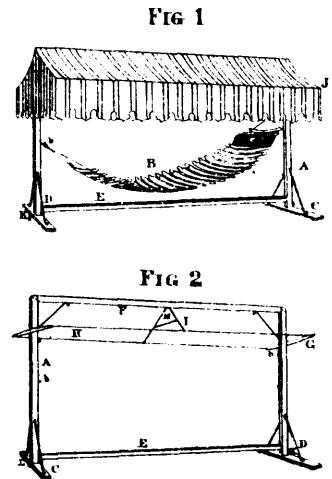
31965 Pullman's Connection between Railroad Cars.



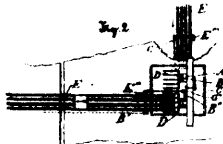
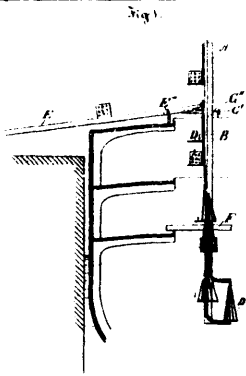
31966 Midgley's Wire Body for Hose.



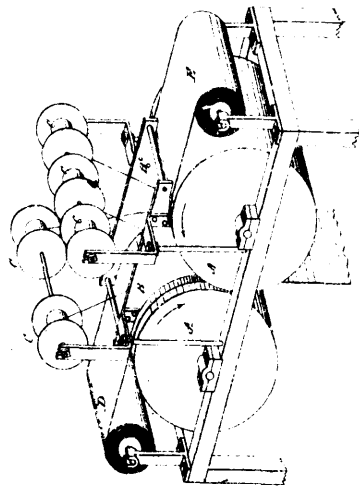
31967 Long's Base for Fence Posts.



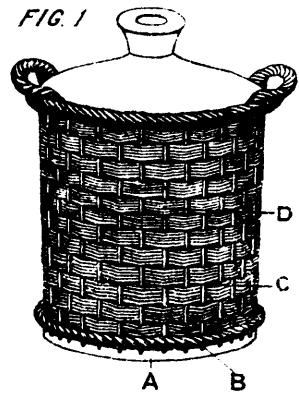
31969 Fuller's Hammock.



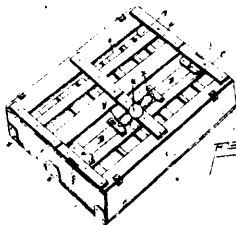
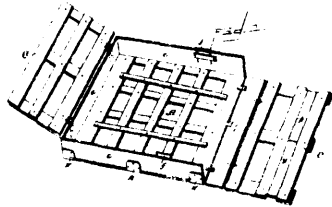
31970 Henderson's Freight Handling Apparatus.



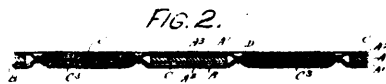
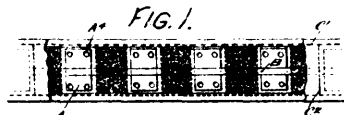
31971 Child's Process for Strengthening Paper



31972 Hunt's Case for Bottles, etc.



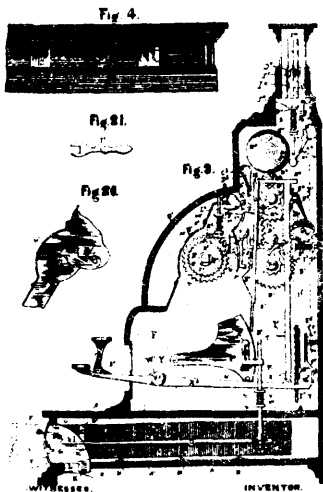
31973 Auth's Portfolio.



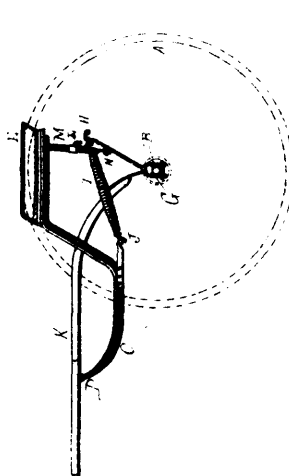
31974 Hoke's Electric Belt.



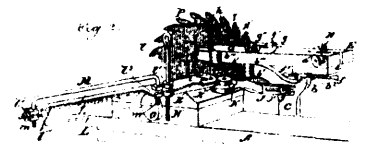
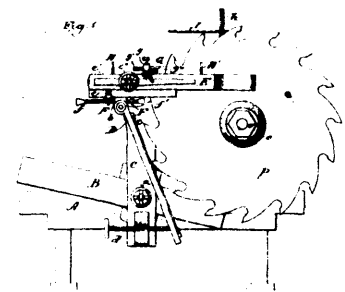
31975 Butz's Bottle Cleaner.



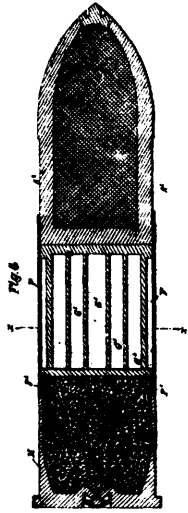
31976 Sharpe's Cash Register.



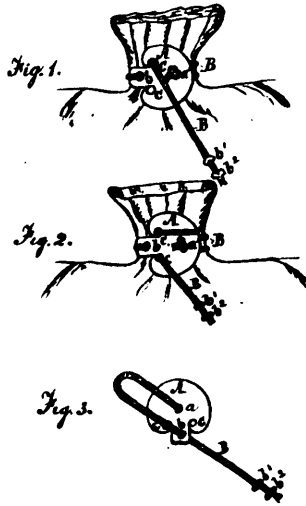
31977 Malmberg's Two-Wheeled Vehicle.



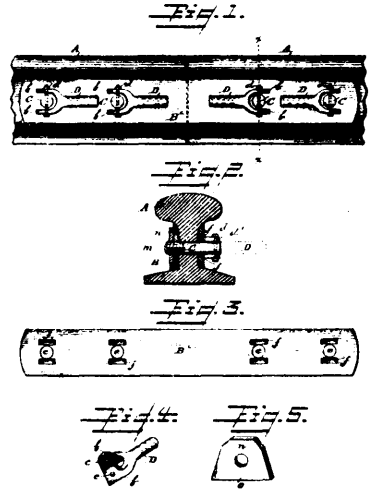
31978 Andrews & Georgia's Jointer and Side Dresser and Sharpener for Saws.



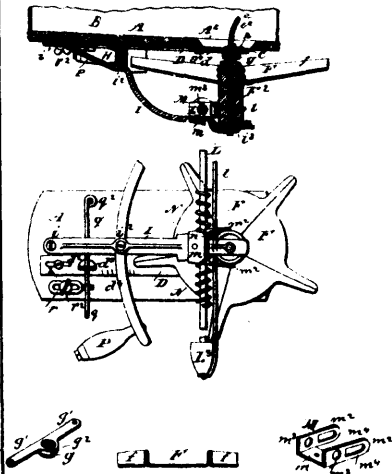
31978 Snyder's Explosive and other Projectiles or Shells.



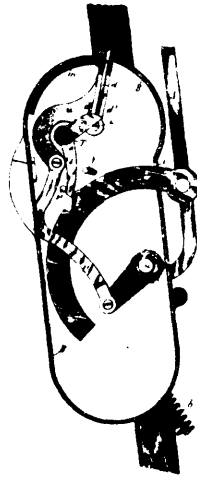
31980 Gibson's Tie for Securing Bags, etc.



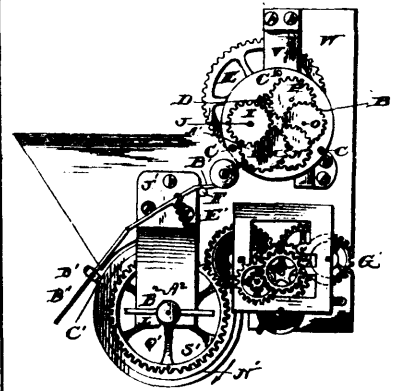
31981 Penrose's Bolt Locking Device.



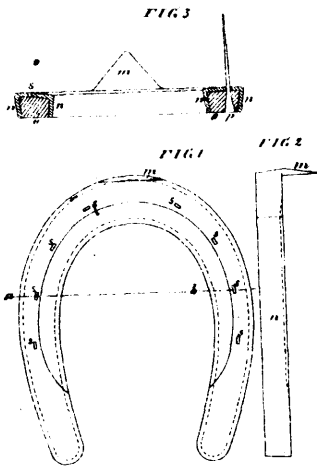
31982 Rittenhouse's Hand Seeder.



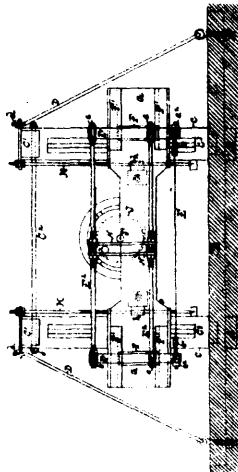
31983 Hallett's Mechanism for Controlling the Motion and use of Seats, etc.



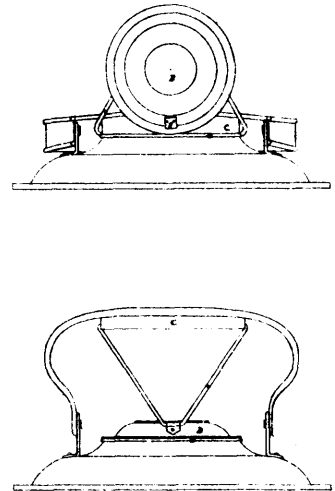
31984 Terry's Indicator and Recorder for Revolving Shafts.



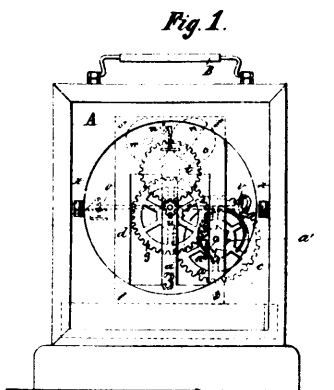
31985 Anderson's Horse Shoe.



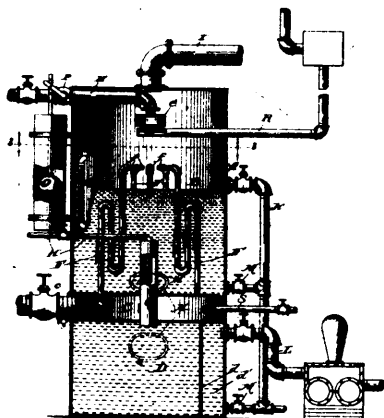
31986 Lane's Sawing Machinery.



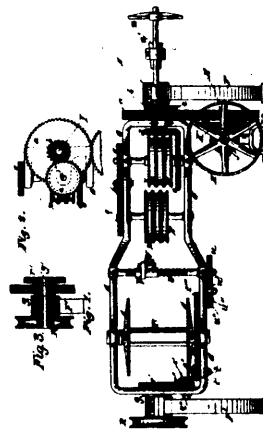
31987 Knox's Kettle Lid.



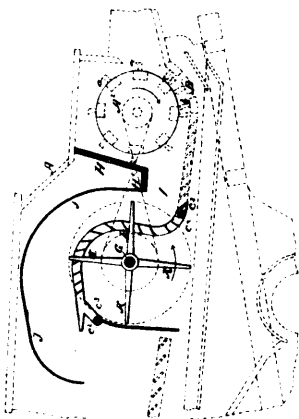
31988 Wissemann & Koenig's Time Index Marker.



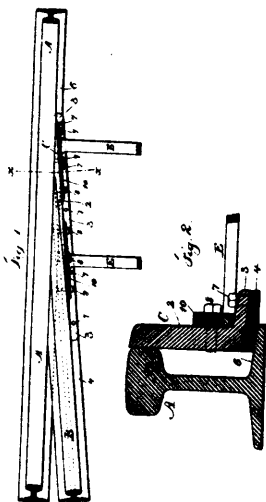
31989 Ferreira's Feed Water Heater and Purifier



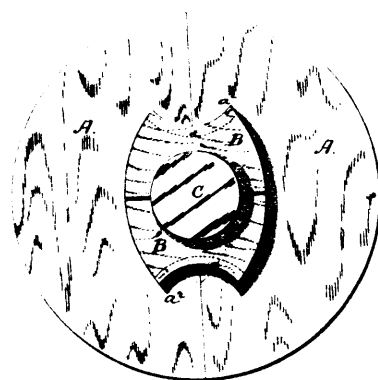
31990 Day's Machinery for Forming and Reeling Ropes.



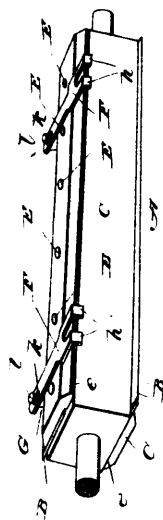
31991 Landis' Thrashing Machine.



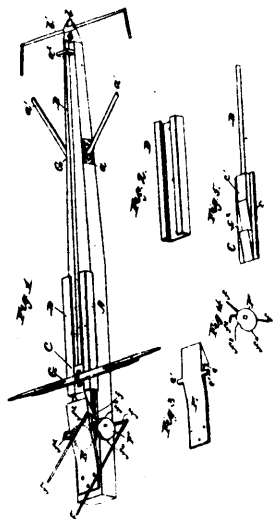
31992 Palmer's Point for Switch Rails.



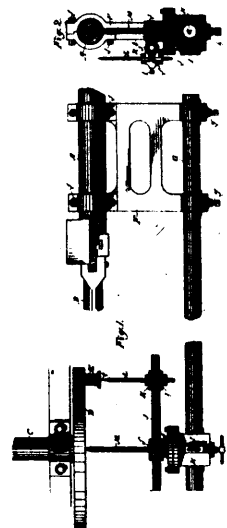
31993 Pollard's Split Pulley.



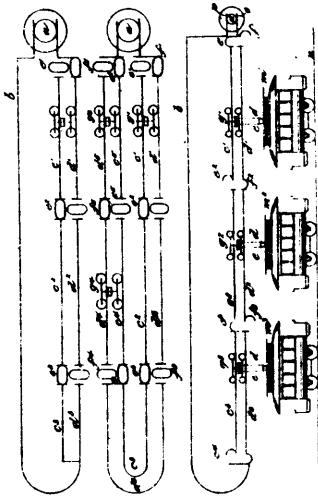
31984 Allen's Cutter Head, etc.



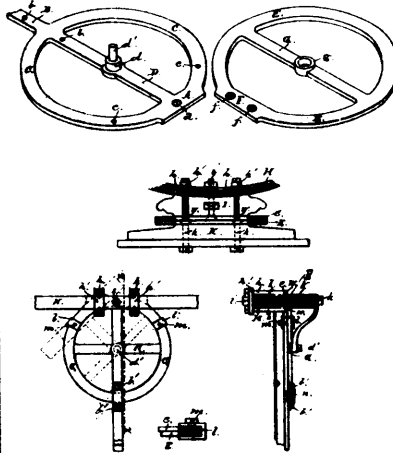
31995 Kline's Safety Pole and Shaft.



31996 Paterson's Instrument for Testing the Fairness of Steam Engine Crank Shafts



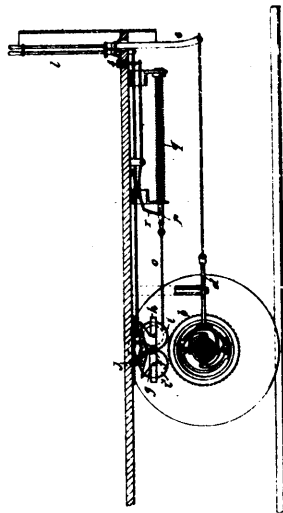
31997 Short's Electric Railway.



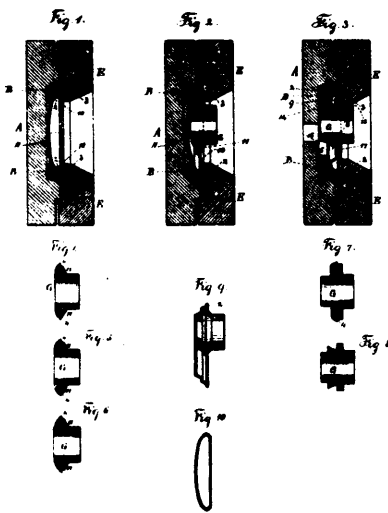
31998 Doersom's Fifth Wheel for Vehicles.



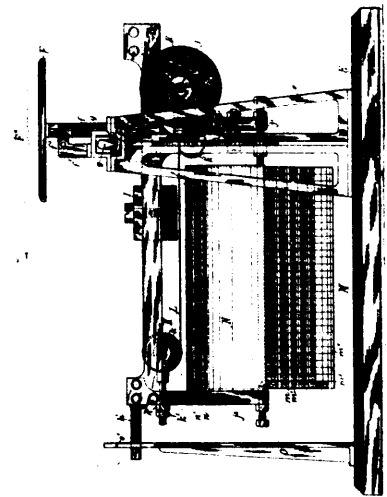
31999 Ximenes' Banjo, Guitar, etc.



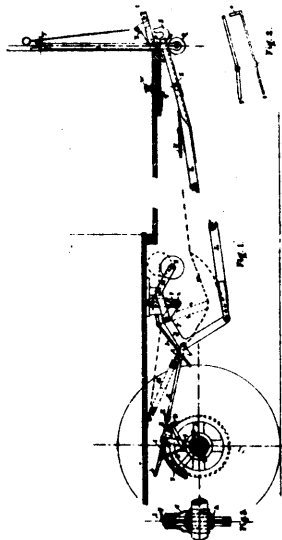
32000 Siccardi's Car Brake and Starter.



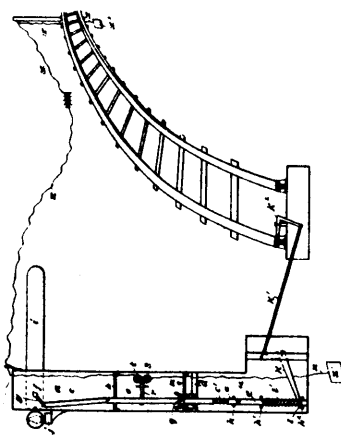
32001 Ecaubert's Manufacture of Watch Case Lids.



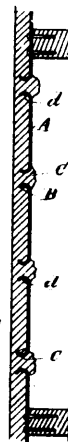
32002 Skipworth's Weighing Machine.



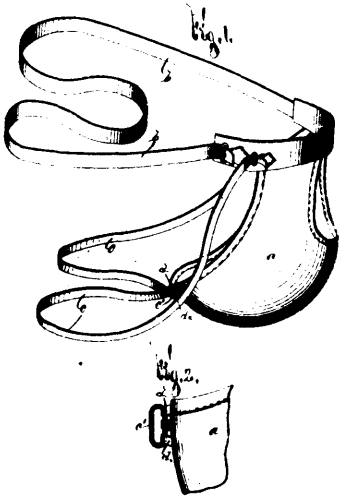
32003 Watkins' Tram Car Starter.



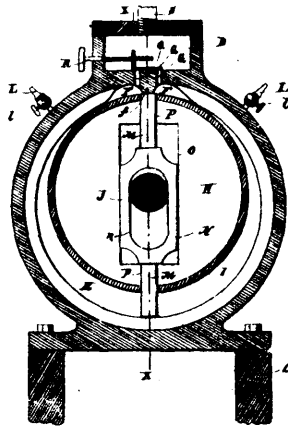
32004 Curry's Railway Signal.



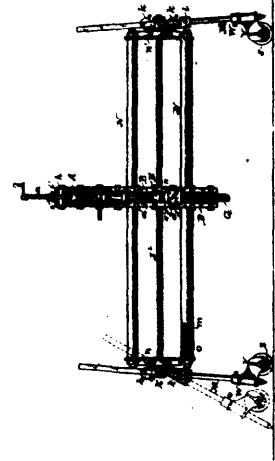
32005 Kinney's Metallic Lathing.



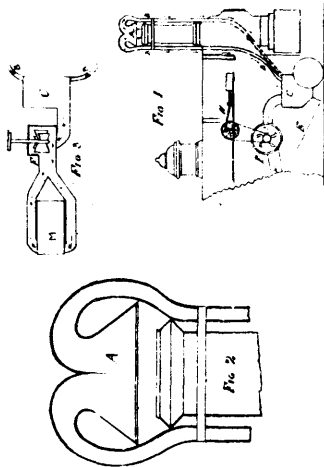
32006 Wells' Suspensory.



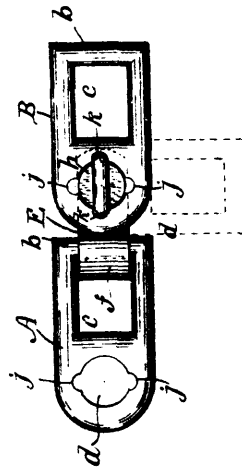
32007 Hines' Rotary Engine.



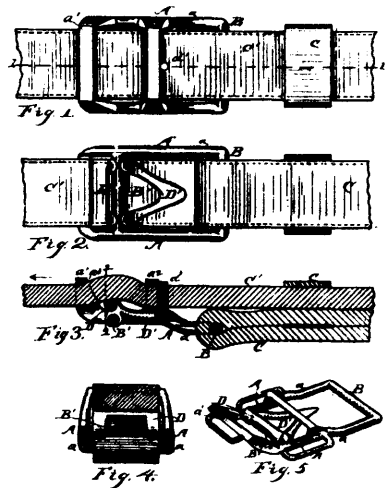
32008 Saunders' Channelling and Gadding Machine.



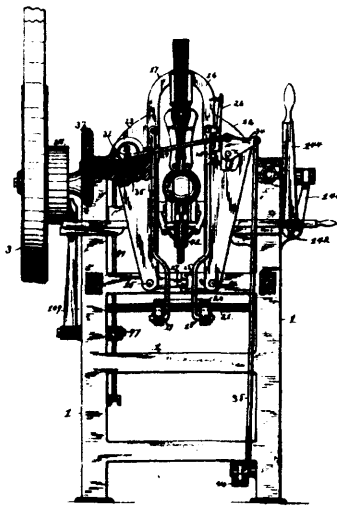
32009 Smith's Spark Arrester, etc.



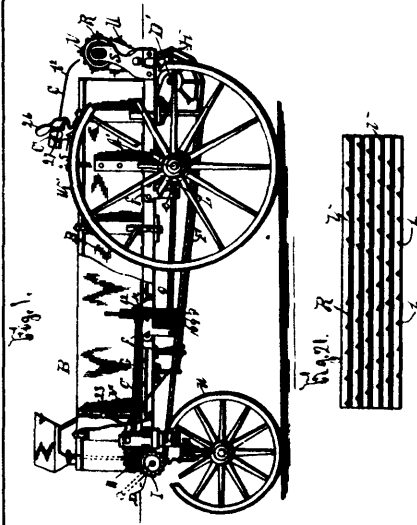
32010 Boswell's Drive Chain.



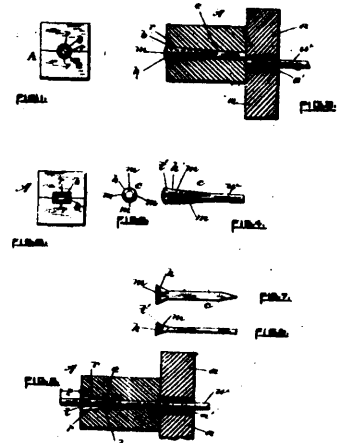
32011 Bartlett's Trace Buckle.



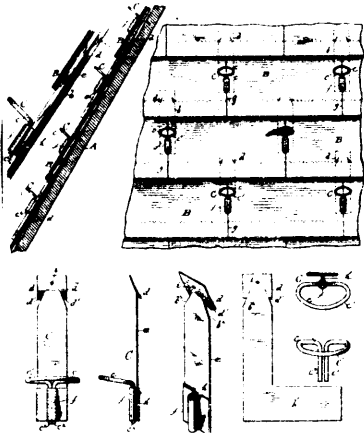
32012 Lape's Broom Sewing Machine.



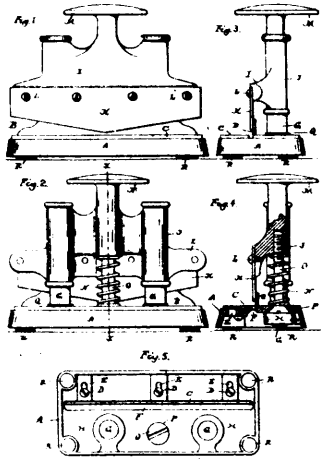
32013 Watkins' Fertiliser Distributor.



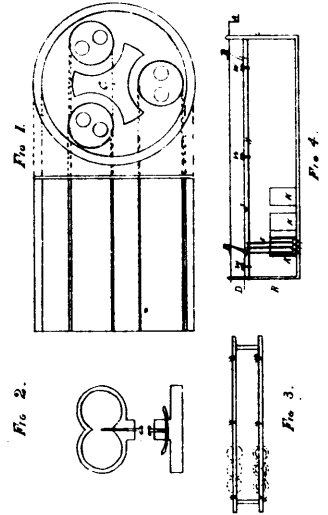
32014 Rogers' Blank Heading Die.



32015 O'Gara's Snow Guard.



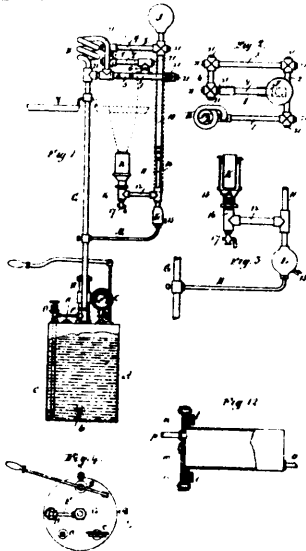
32016 Holmes' Device for Cutting the Edges of Sealed Envelopes, etc



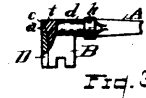
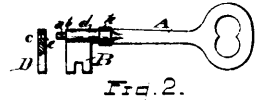
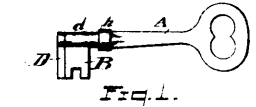
32017 Morrison's Primary Battery, etc.



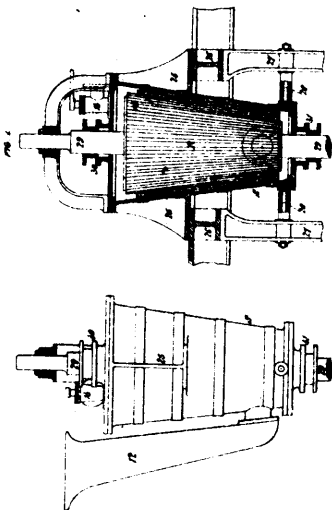
32018 Condon's Ice Cream Freezer.



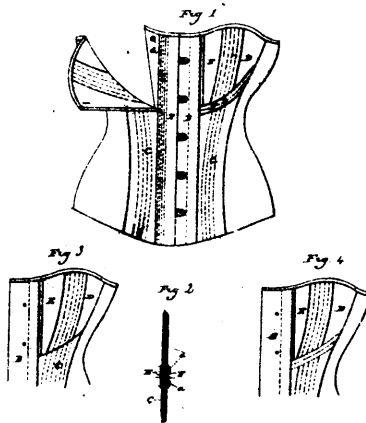
32019 Rose's Lamp.



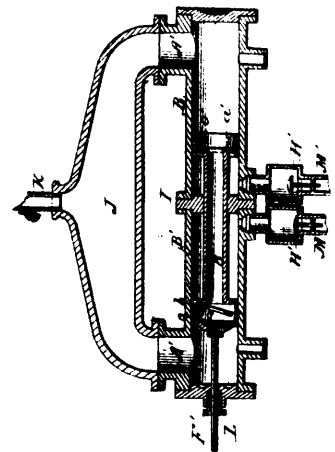
32020 Stoddard's Door Key.



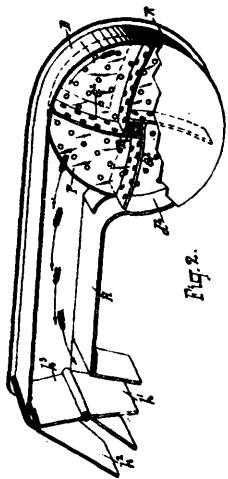
32021 Annandale's Pumping Engine.



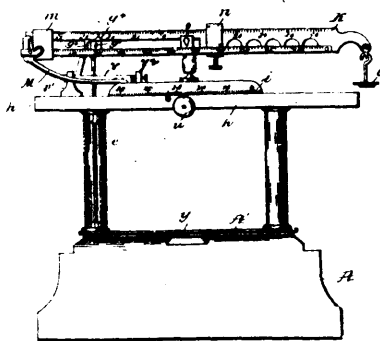
32022 Nasou's Corset.



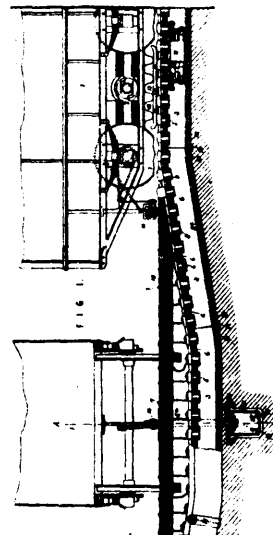
32023 Close's Method and Apparatus for Transferring Liquid.



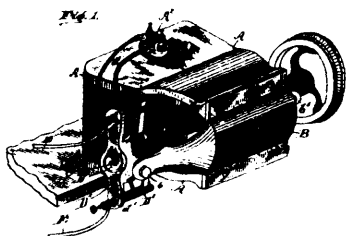
32024 White's Grain Scourer.



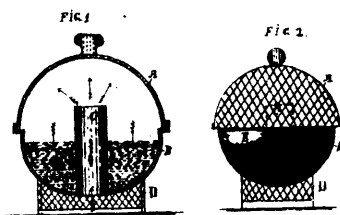
32025 Pitrat's Weighing and Price Scale.



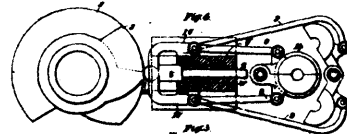
32026 Wynne's Application of Electricity to Vehicles on Tram and Railways, etc.



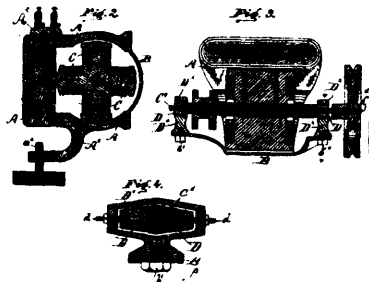
32027 Woolley's Electric Motor.



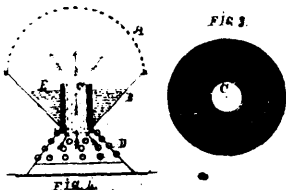
32028 Potter's Fly Catcher.



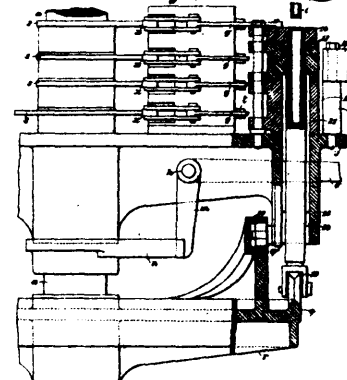
32029 Ryland's Machinery for the Manufacture of Bottles.



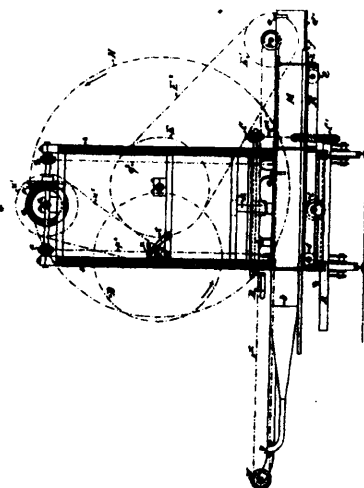
32027 Woolley's Electric Motor.



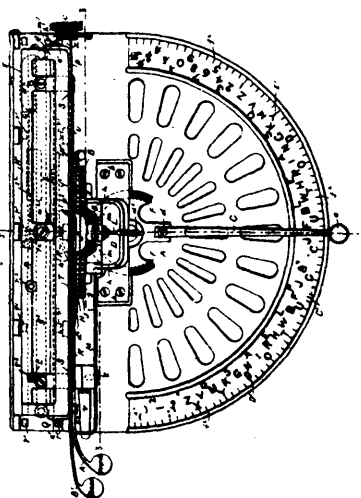
32028 Potter's Fly Catcher.



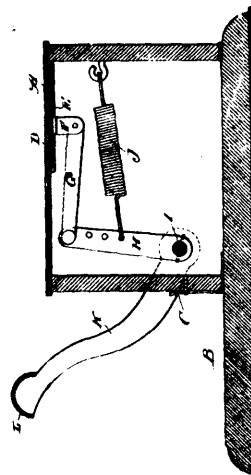
32029 Ryland's Machinery for the Manufacture of Bottles.



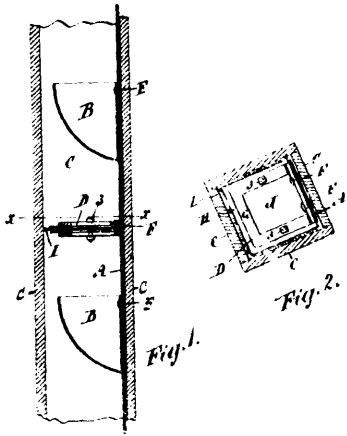
32030 Runge's Charging Scoops for Gas Retorts.



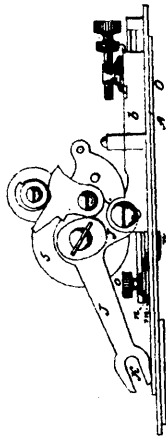
32032 Taylor & White's Type Writing Machine.



32033 Moos' Cigar Cutter.



32034 Purdy's Bucket Elevator for Flouring Mills.



32035 Johnson's Button Hole Attachment.

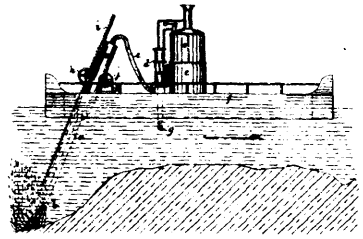


Fig. 1.

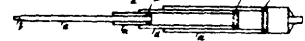
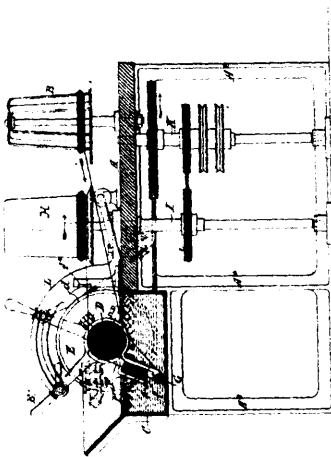


Fig. 2.



Fig. 3.

32036 Baker's Machine for Removing Sand Bars, etc.



32037 Bolton's Machinery for Drawing Wire.

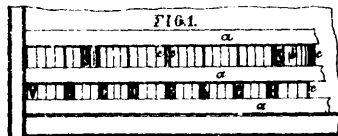


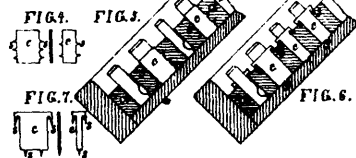
FIG. 1.



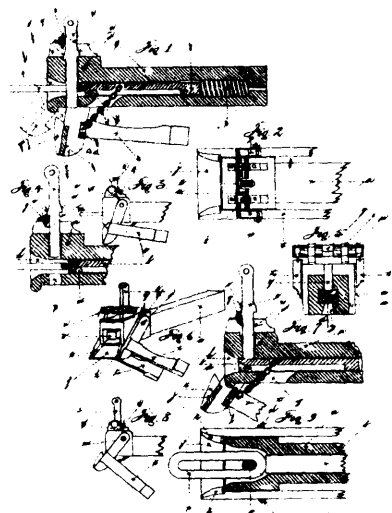
FIG. 2.



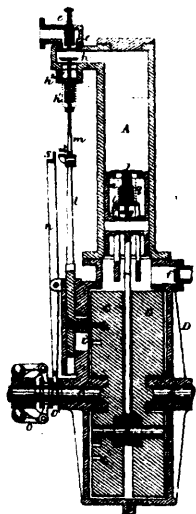
FIG. 3.



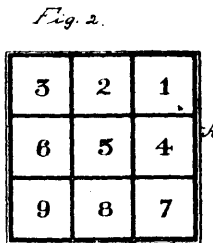
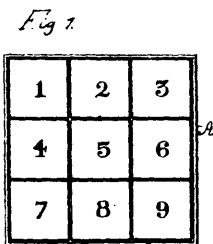
32038 Stobzenwold's Casting of Certain Printing Type, etc.



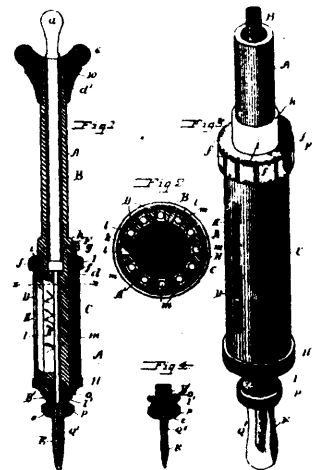
32039 Turner's Car Coupling.



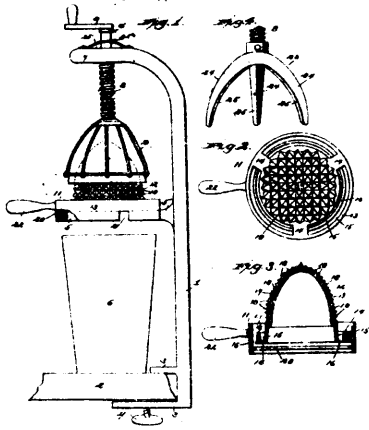
32040 Dalmier's Motor Engine.



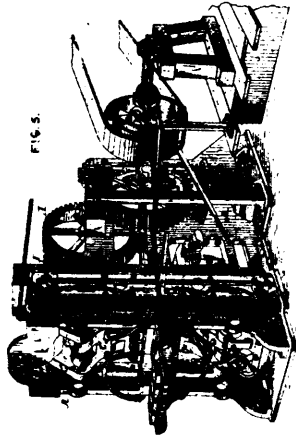
32041 Briggs' Mathematical Puzzle.



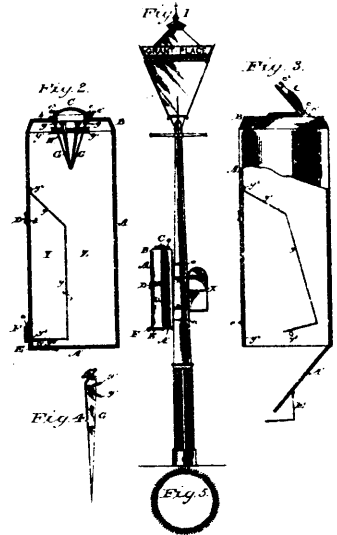
32042 Burton & Gurnee's Secret Nail Driver, etc.



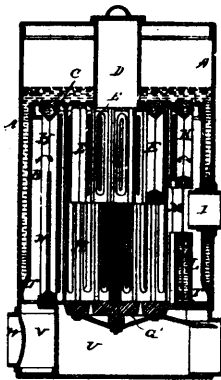
32043 Easley's Lemon Juice Extractor.



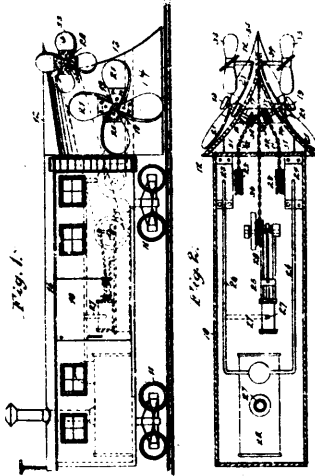
32044 Ross' Brick Machine.



32045 Taylor's Letter Box.



32046 Button's Steam Boiler.



32047 McCarthy & Moran's Snow Plough.



Fig. 2.

32048 Bisson's Purse.

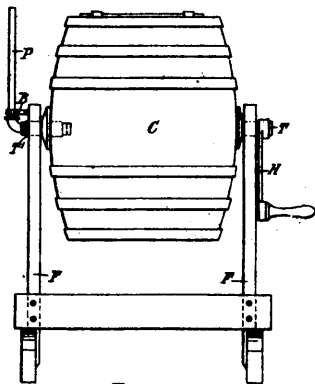
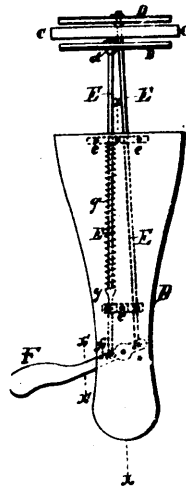
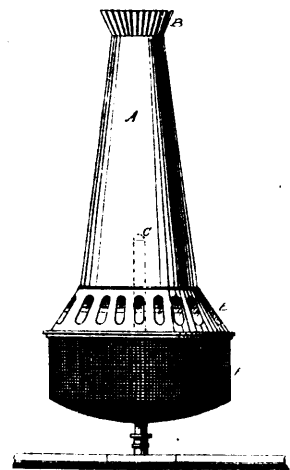


Fig. 1.

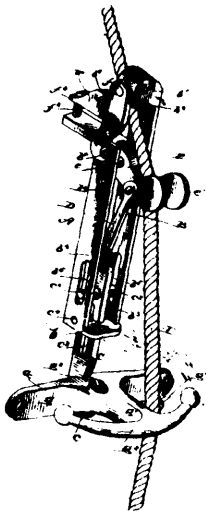
32049 Smith's Vent for Churns.



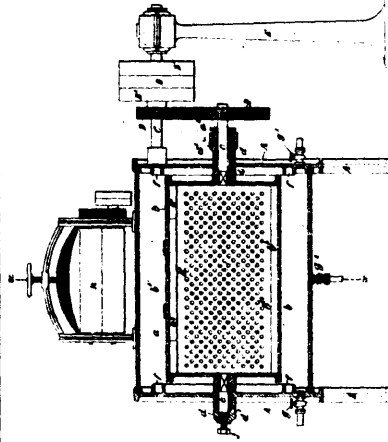
32050 Thompson's Muffling Attachment for Violins.



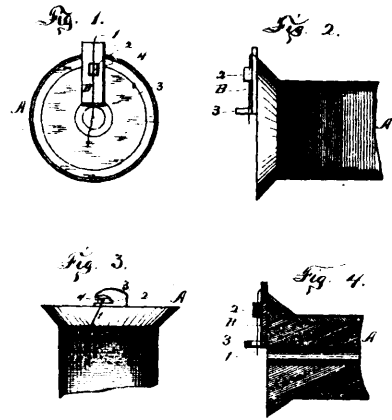
32051 Smith & Boyd's Gas Burner.



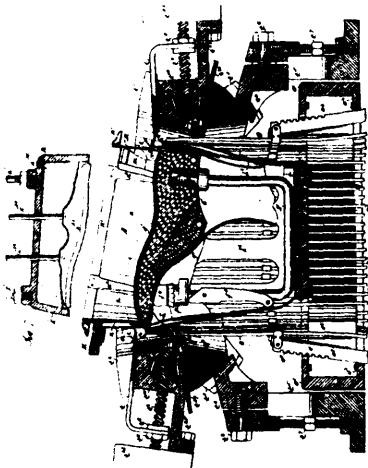
32052 Bruce's Fire Escape.



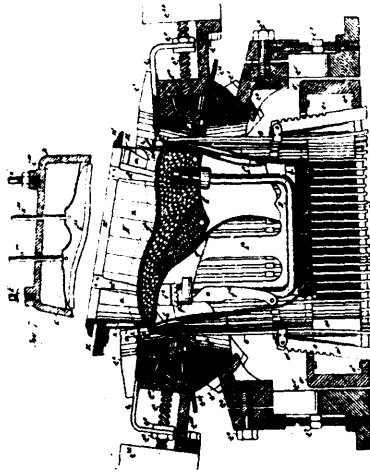
32053 Shedlock's Washing Machine.



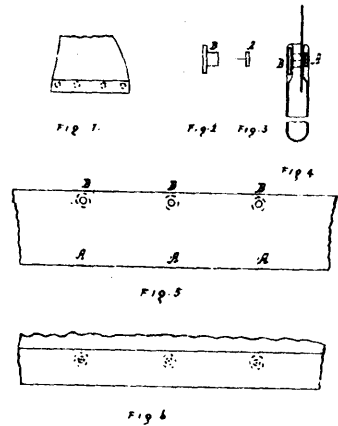
32054 West's Thread Holder and Cutter.



32055 Patten's Art of Lasting Boots and Shoes.



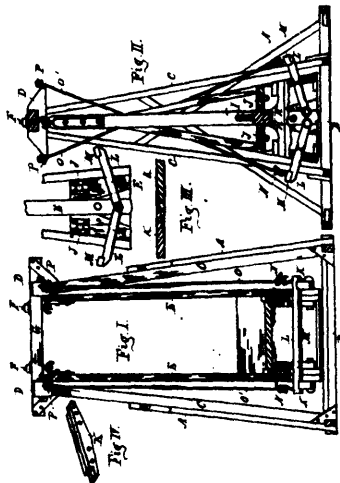
32056 Patten's Machine for Lasting Boots and Shoes.



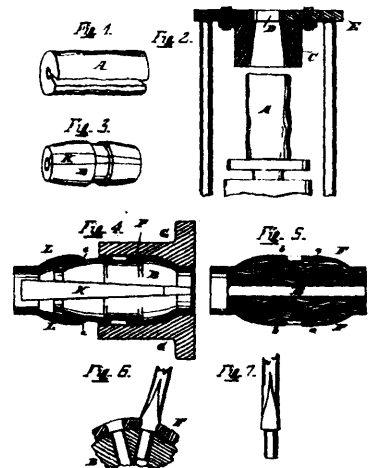
32057 Rankin's Protecting Ladies' Skirts.



32058 Jaques' Lasting and Upholstering Tool.



32059 Fowler's Swing.



32060 Reid's Vehicle Hub.

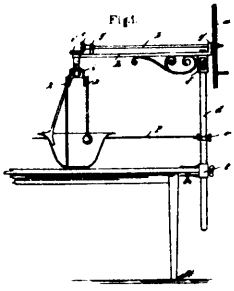
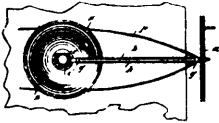
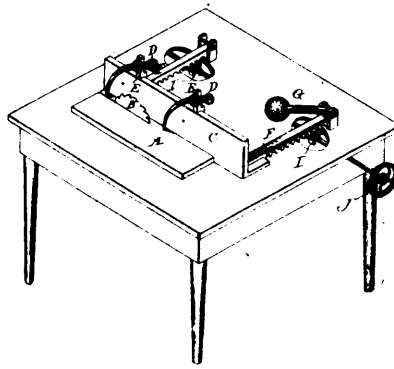


Fig. 2.



32061 Handel's Apparatus for stirring up Fluids, etc.



32062 Teeguarden's Saw Table Gauge.

Fig. 1.



Fig. 2.

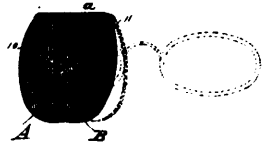
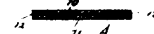
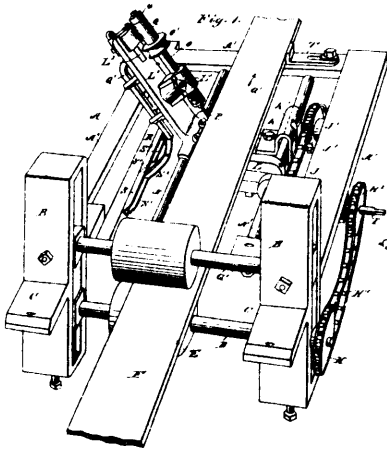


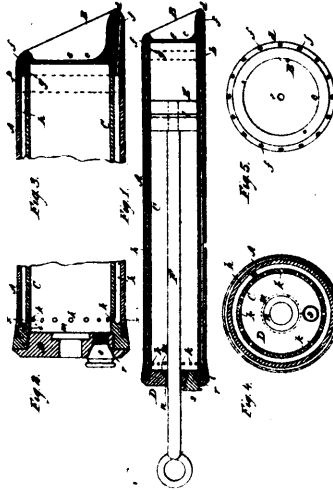
Fig. 3.



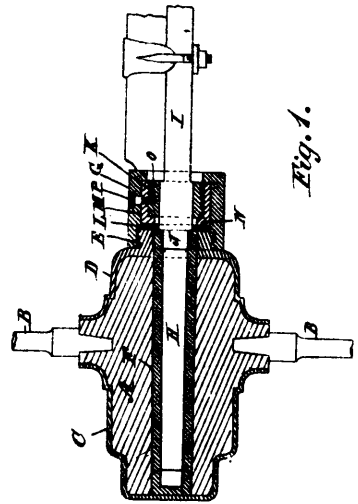
32063 Thorpe's Eye-Glass Polisher.



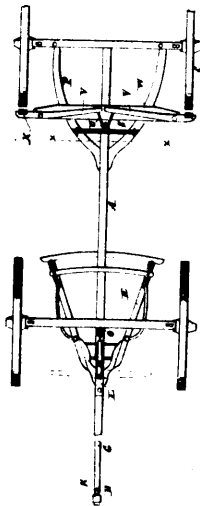
32064 Haskell's Boring Machine.



32065 Kirkwood's Syringe.



32067 Mirfield's Axle and Hub-Attaching Device.



32068 Aylesworth's Waggon Brake.

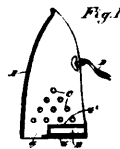


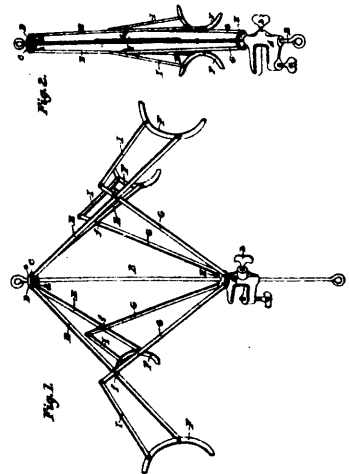
Fig. 2.



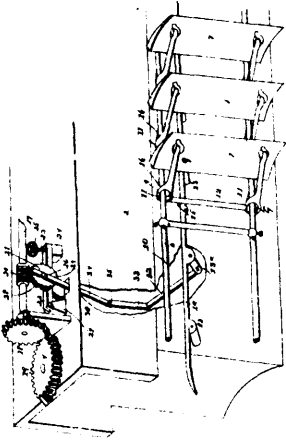
Fig. 3.



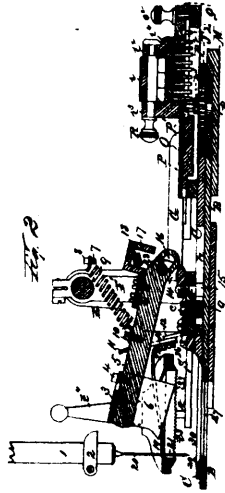
32069 Welch's Inhaler.



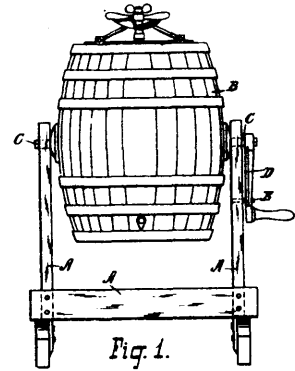
32070 Kaspar's Yarn Reel.



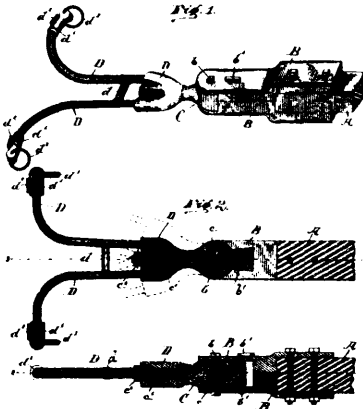
32071 Besemer's Water Current Motor.



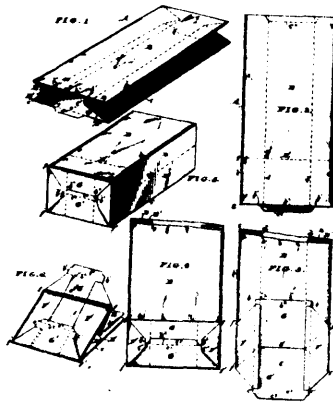
32072 Williams' Button Hole Attachment.



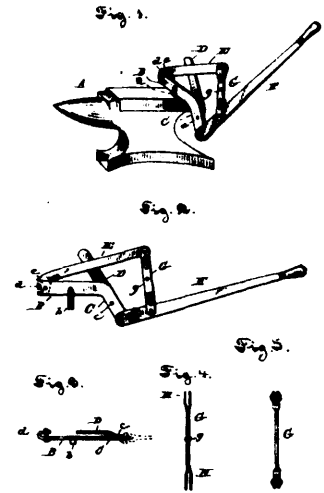
32073 Drader's Barrel Churn.



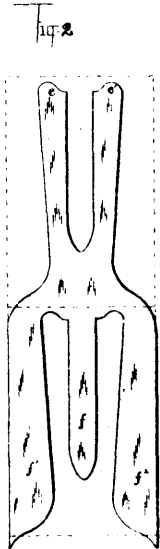
32074 Van Camp's Breast Yoke.



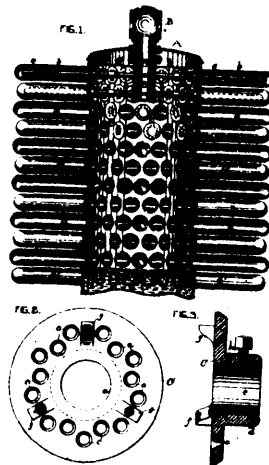
32075 Stilwell's Paper Bag.



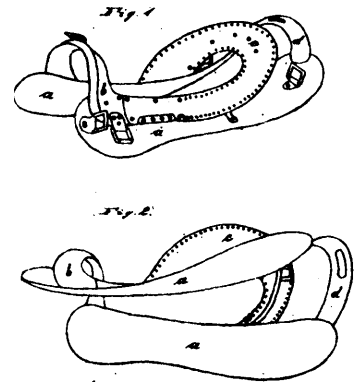
32076 Adams' Anvil Shears



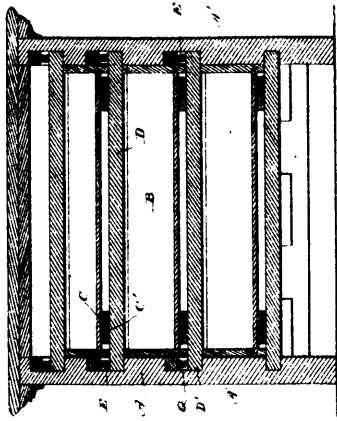
32077 Silliman & Cowdery's Fork Blank.



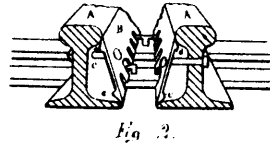
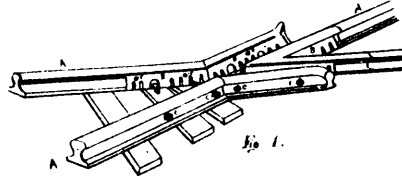
32078 Houghtaling's Perforated Plate for Drying Steam.



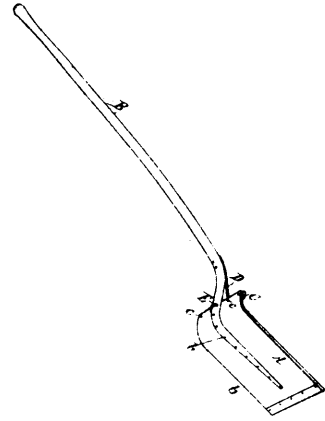
32079 Gross' Saddle Frame.



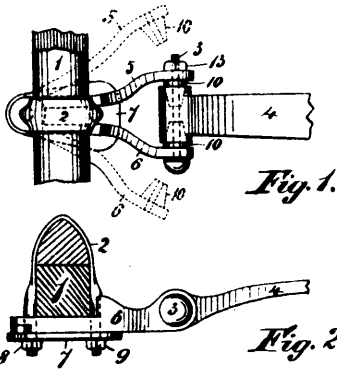
32080 Katherman & Folk's Bureau, etc.



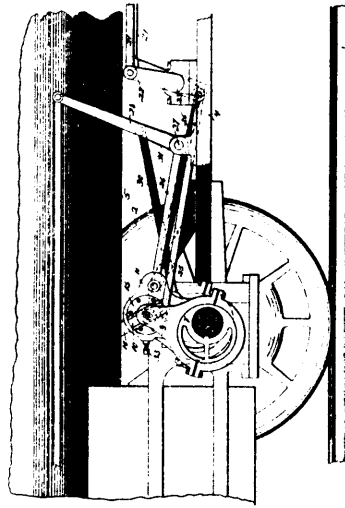
32081 Campbell's Railway Frog Guard.



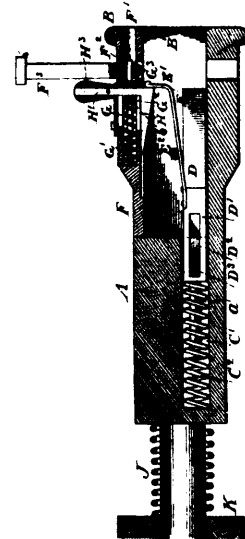
32082 McLaren's Snow Shovel.



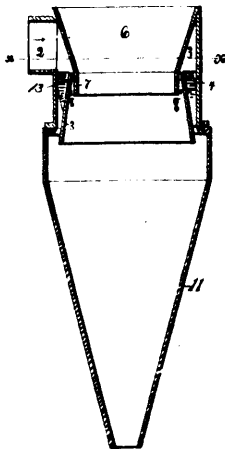
32083 Ross' Thill Coupling.



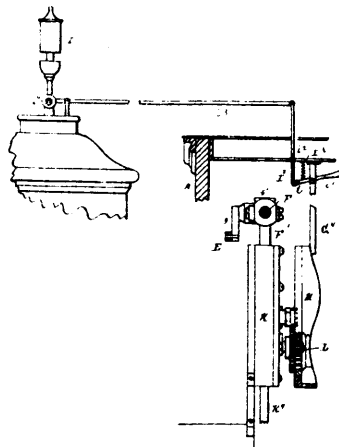
32084 Grime's Valve Gear.



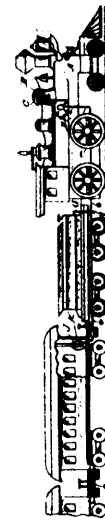
32085 Courtney's Car Coupler.



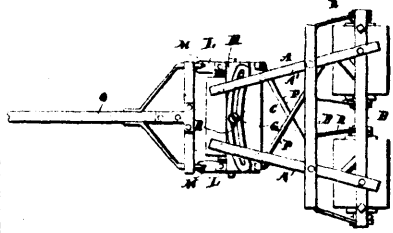
32086 Hardenburg's Dust Catcher.



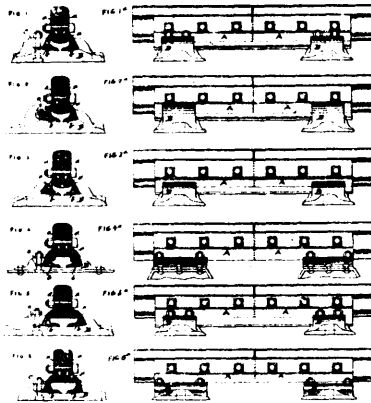
32087 Rymer's Whistle Actuating Mechanism



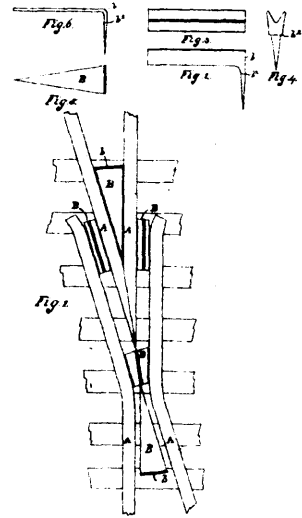
32088 Wilson's Heating Railway Trains.



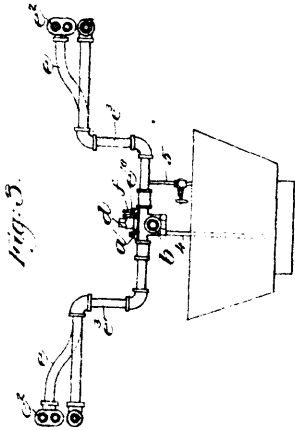
32084 Blebold's Land Roller.



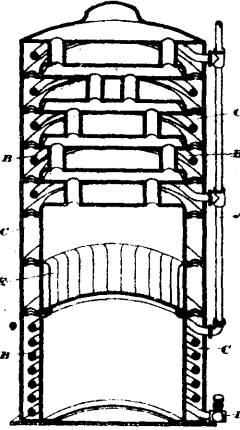
32090 Winy's Fish Joint and Chair.



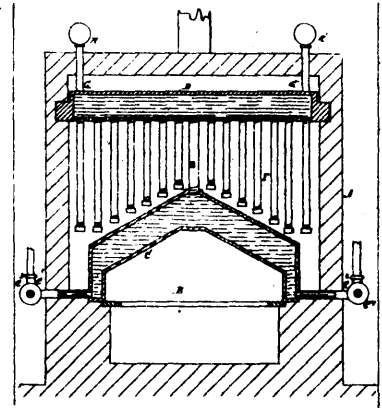
32081 Wakenfield's Foot Guard for Frogs, etc.



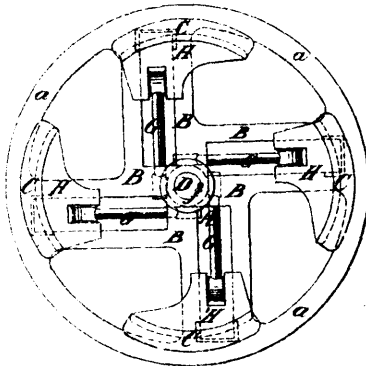
32082 Sewall's Car Heating Apparatus.



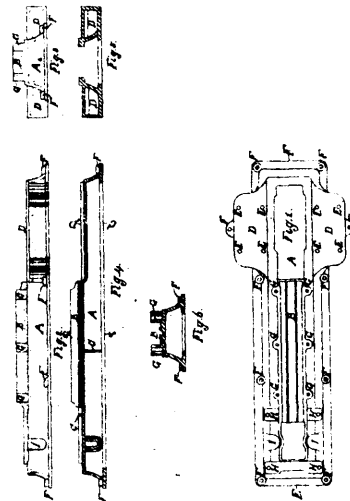
32083 Gurney's Heater.



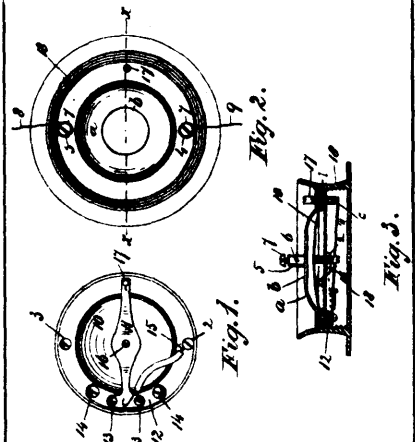
32094 Mout & Burt's Water Heater.



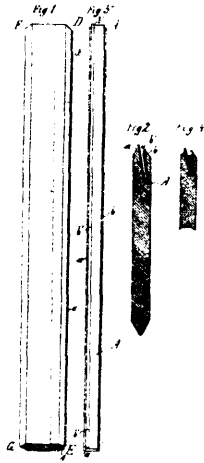
32095 Autenrieth's Expansion Pulley.



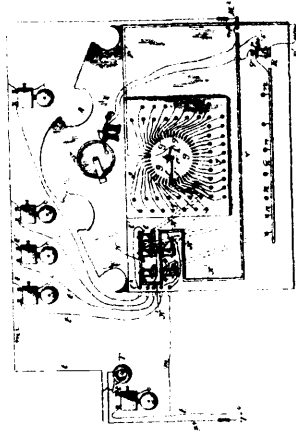
32096 Guy's Steam Engine.



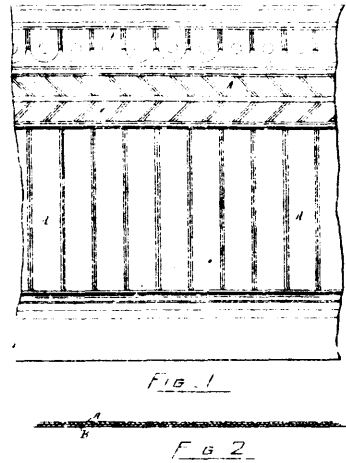
32097 Cortland's Thermostat.



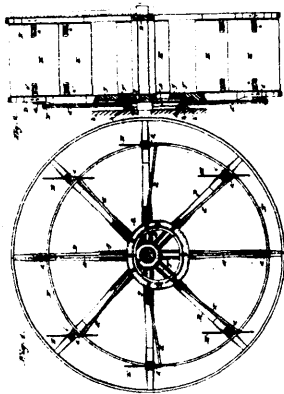
32099 Knade's Rule.



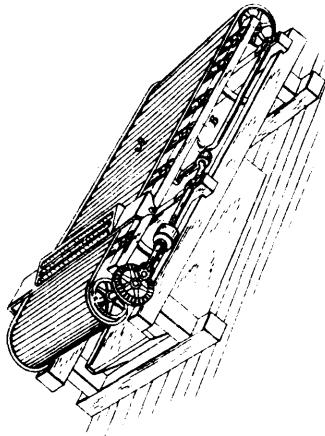
32100 Cox's Alarm System.



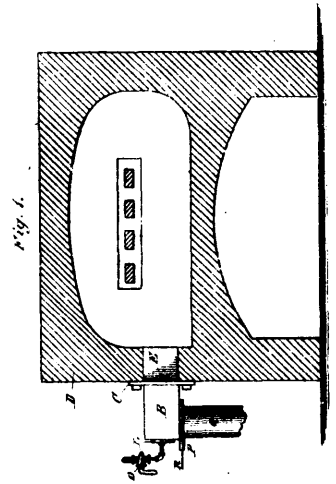
32101 Silver's Wood & Paper Veneer.



32102 Jones' Paddle Wheel.



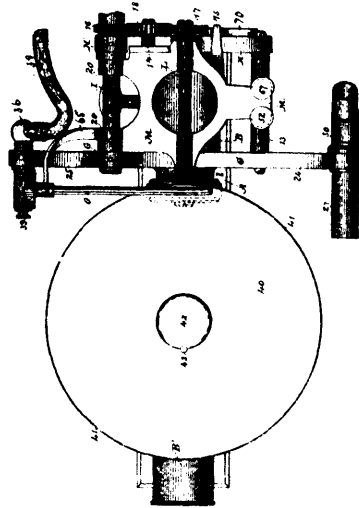
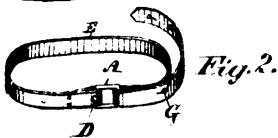
32103 Morse's Oro Concentrator.



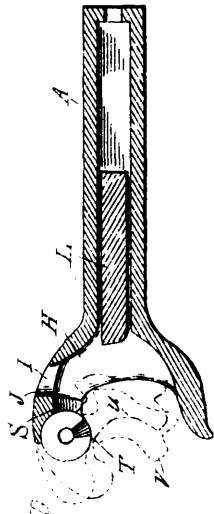
32104 Meyers' Hydro-Carbon Burner.



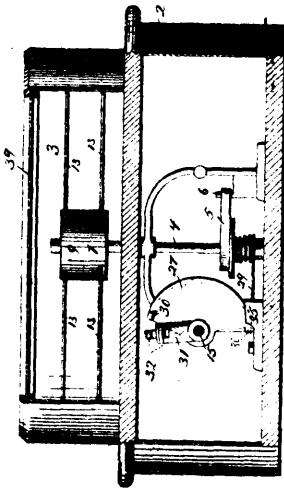
32105 Merritt & Suneman's Bag Fastener



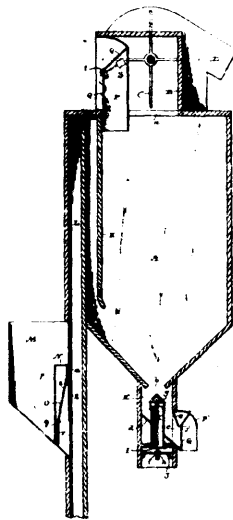
32106 Tainter's Graphophone.



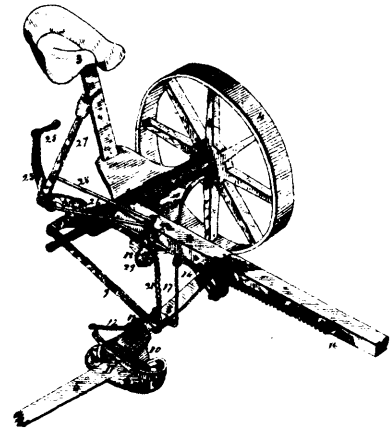
32107 Skinner's Car Coupler.



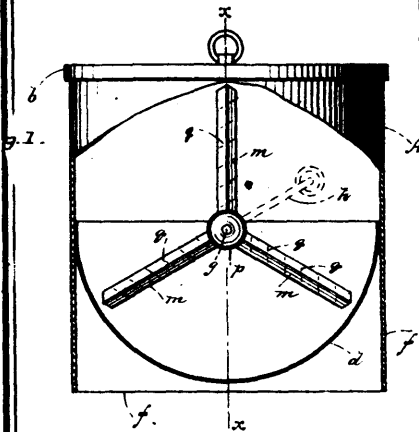
32108 White's Race Course.



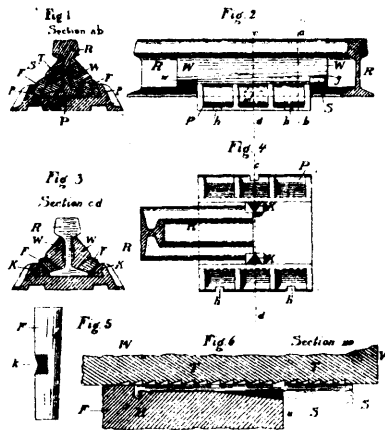
32109 Beynon's Grain Separator.



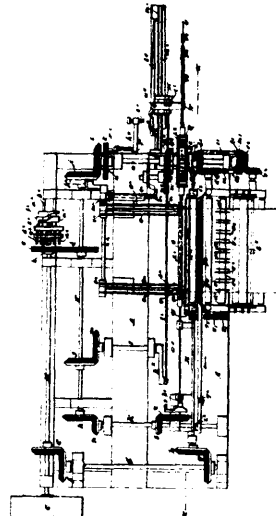
32110 Jones' Mowing Machine.



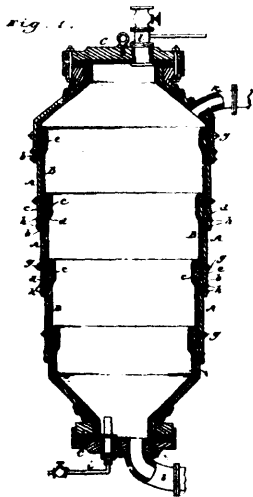
32111 Perry's Egg Beater.



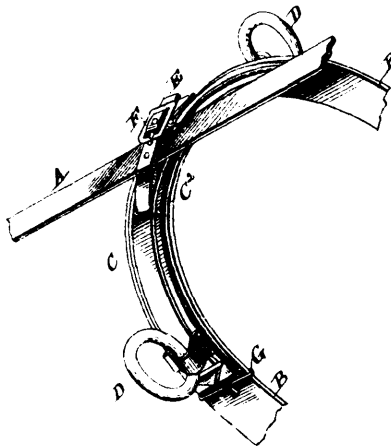
32112 Atkinson's Rail Joint.



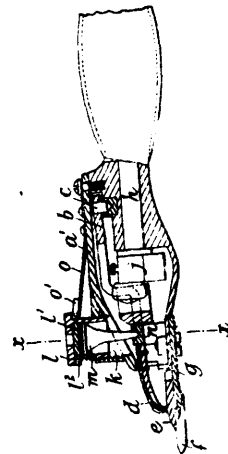
32113 Morton's Tube for Mosaic Embroidery.



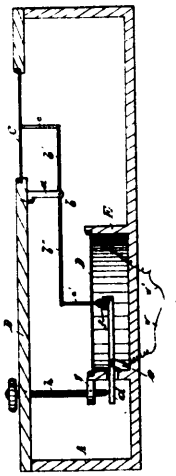
32114 Stebbins' Paper Pulp Digester.



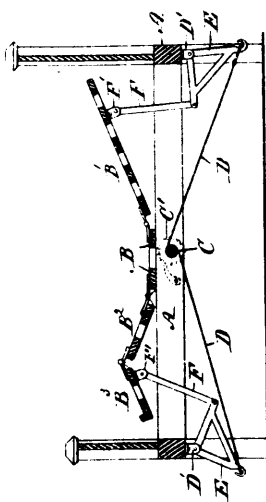
32115 Sims' Rein Support.



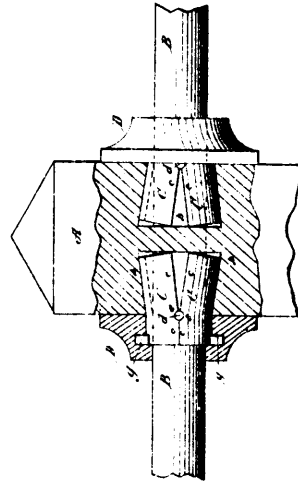
32115 Woiseley's Apparatus for Shearing Sheep etc.



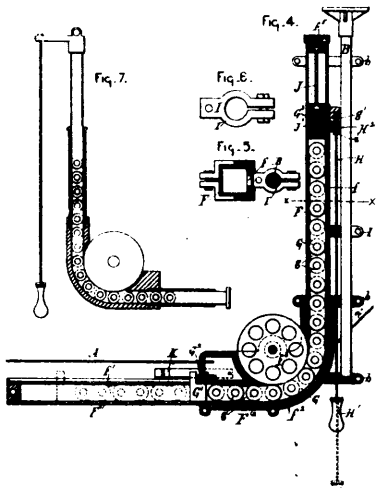
32117 Thompson's Microphone.



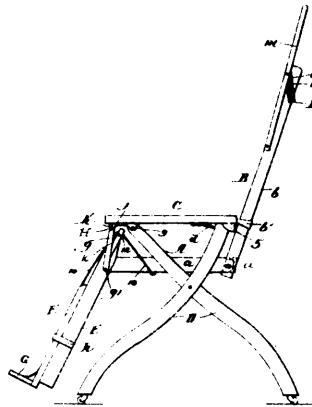
32118 Baird & Taggart's Invalid Bedstead.



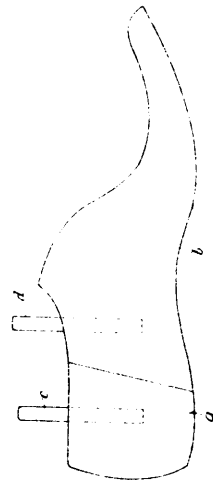
32119 Macrae's Fence.



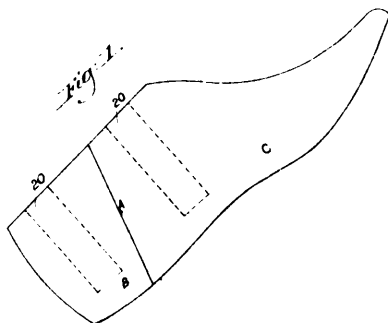
32120 Soper's Cash Carrier.



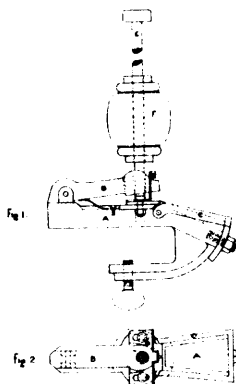
32121 Plummer's Folding Chair.



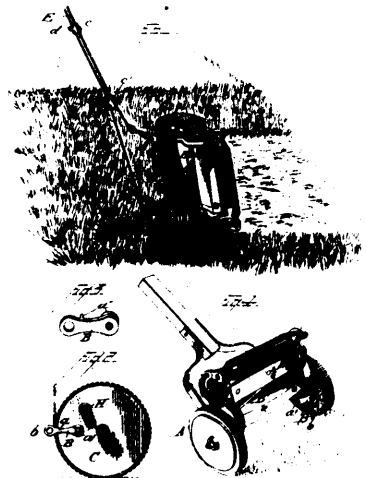
32122 Clark's Last.



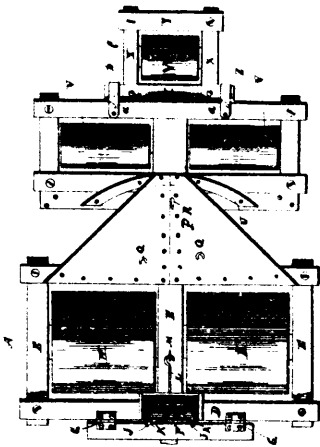
32123 Clark's Last.



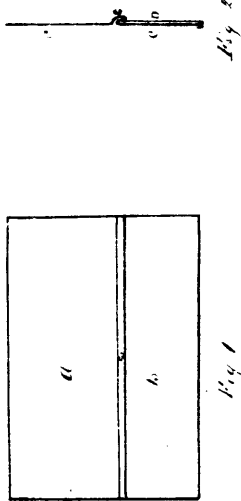
32124 Taylor's Saw Set.



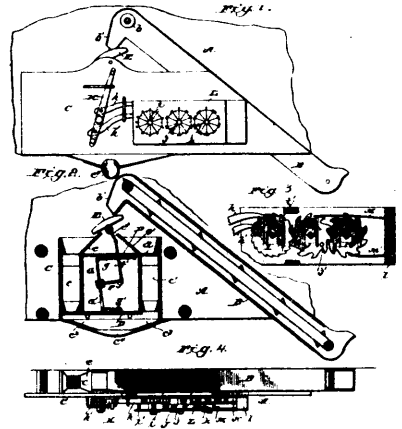
32125 Woodruff's Lawn Mower.



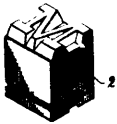
32126 Babcock's Roller for Levelling Snow, etc.



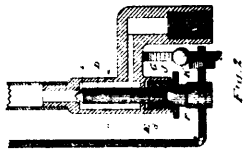
32127 Chappell's Metal Sheet for Making Wash Rollers.



32128 Holland's Grain Measure and Tally.



32129 Pavyer's Printers' Type.



32130 Smith's Cut-Off for Gas Burners.

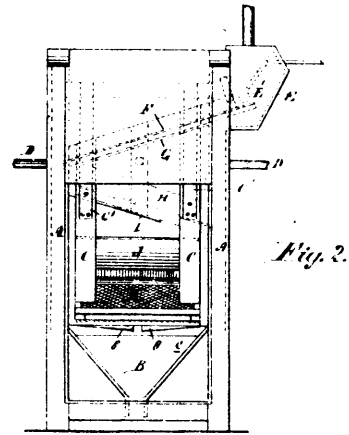
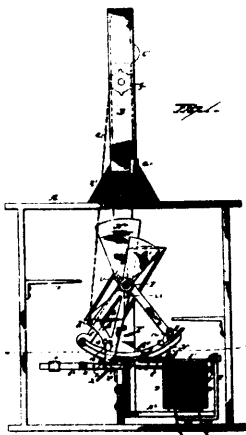
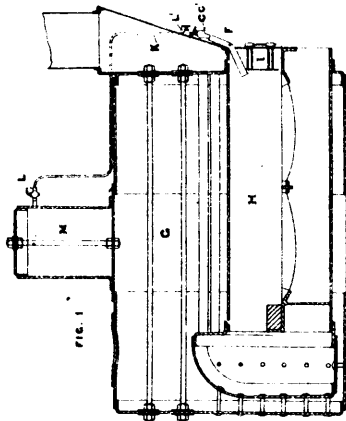


Fig. 2.

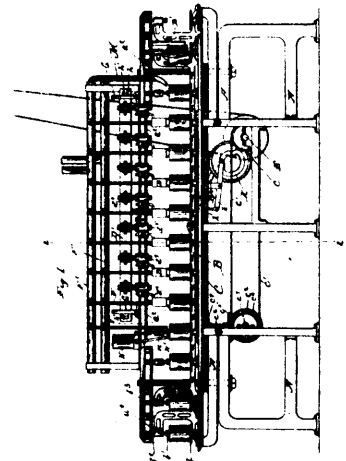
32131 Craig's Sieve Scaiper.



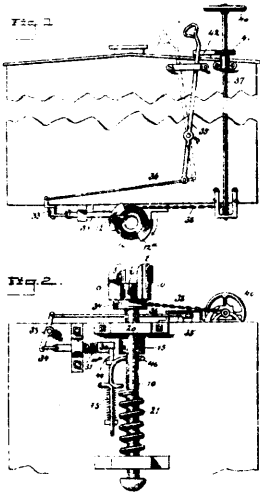
32132 Stitzel & Weinedel's Semaphore Signal.



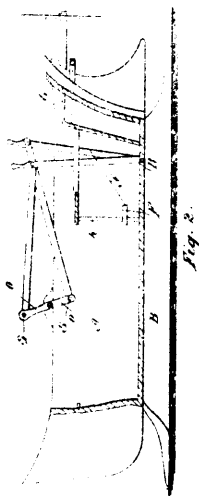
32133 Don & Sands' Apparatus for the Prevention and Consumption of Smoke, etc.



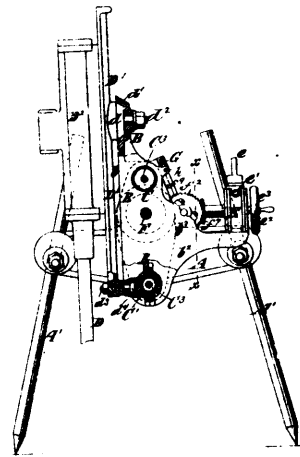
32134 Nortou & Hodgson's Soldering Machine.



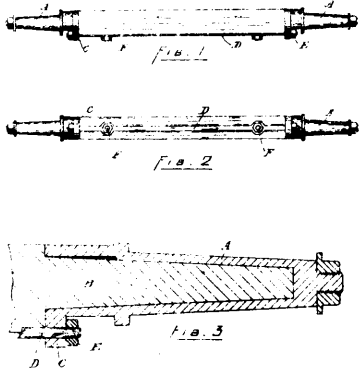
32135 Swenson's Car Coupler



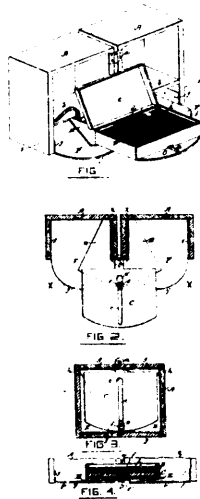
32136 Desmarais' Mode of Propelling Ships.



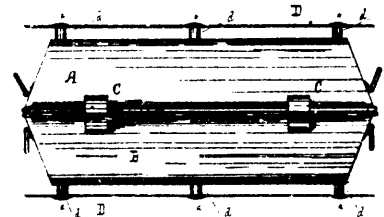
32137 Sergeant's Channeling Machine.



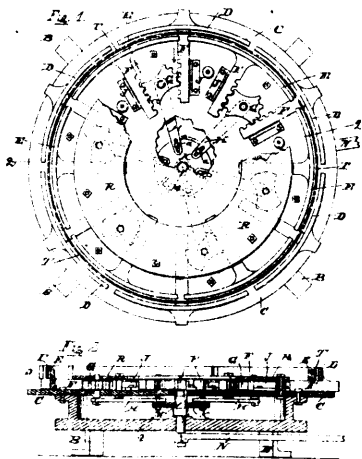
32139 Lockman's Axle Thimble.



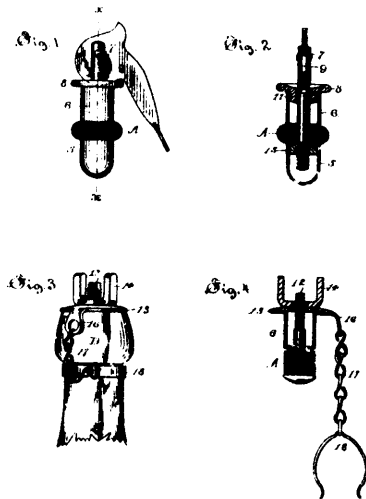
32140 Reynolds' Box and Case.



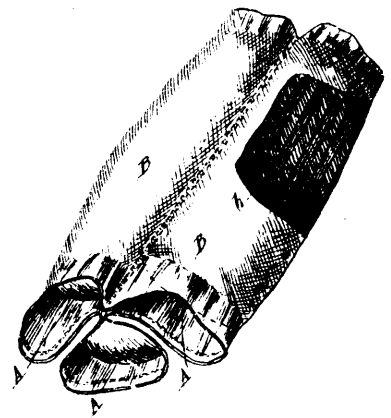
32141 Campbell's Baking Pan.



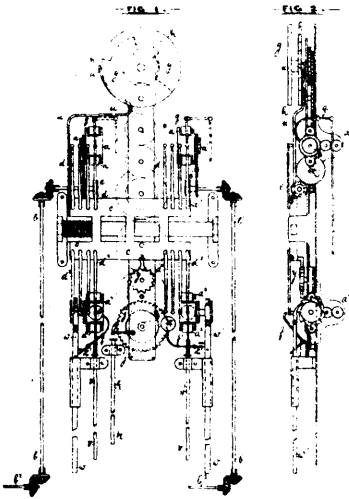
32142 Reid's Tire Truing Machine.



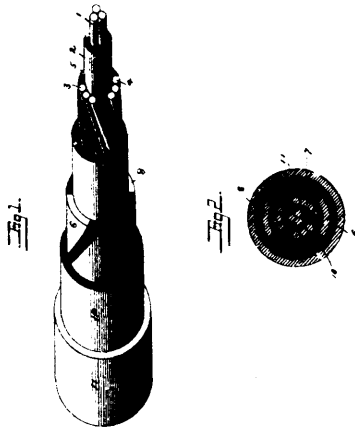
32143 Traut's Bottle Stopper.



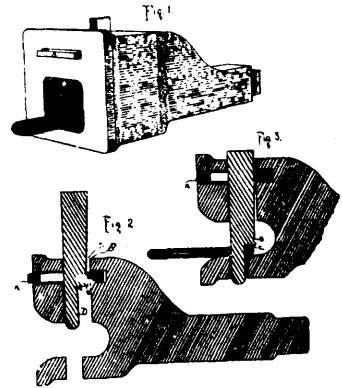
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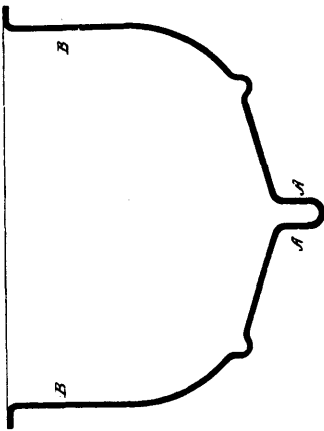
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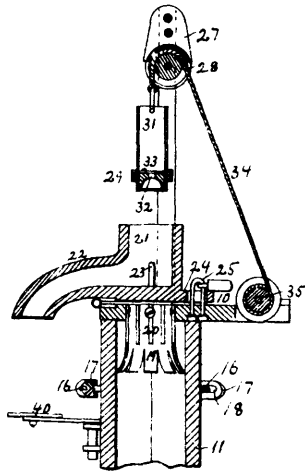
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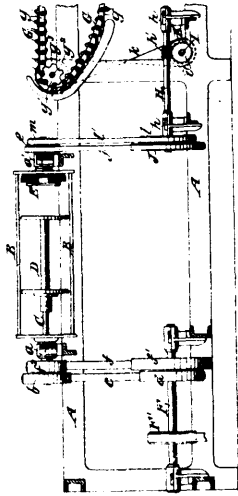
32147 Cox's Car Coupling.



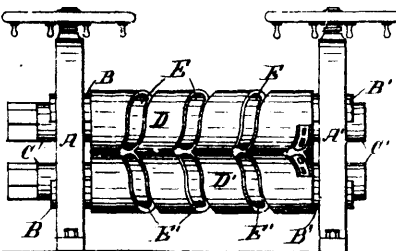
32148 Heslop's Boat.



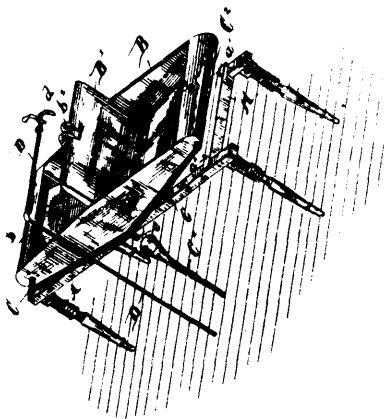
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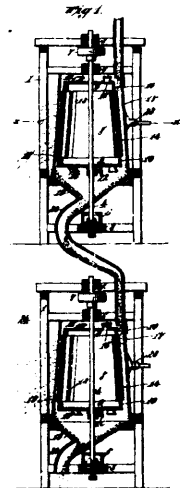
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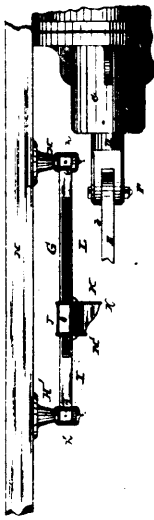
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32152 Dalrymple's Photographic Washing Apparatus.



32153 Ager's Machine for Scouring and Polishing Cereals.



32154 Potts' Registering Gauge for Car Brakes.

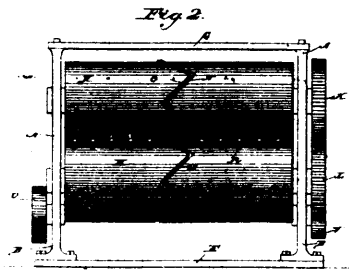


Fig 2

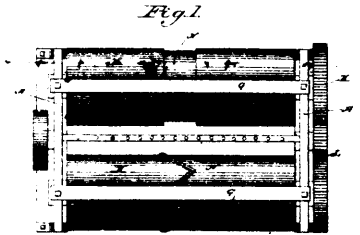
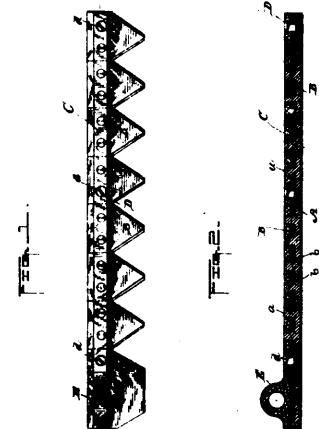


Fig 1

32155 Hawes' Machine for Making Fencing and Lathing, etc.



32156 Hank's Cutter Bar.

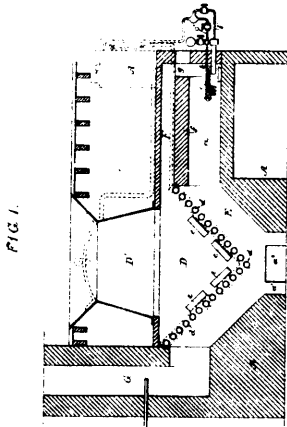
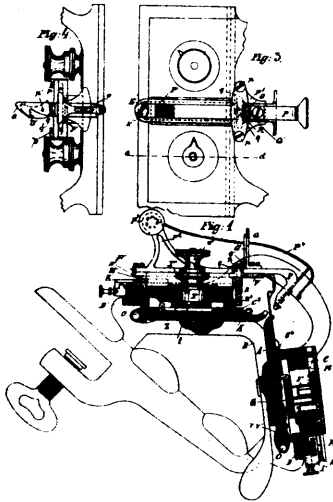
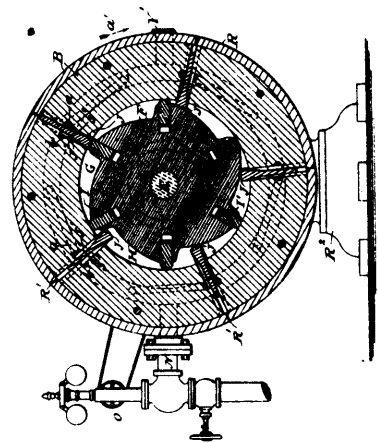


FIG. 1.

32157 Whiting's Refuse Furnace.



32158 Olsson's Knitting Machine.



32159 Harris' Rotary Engine.

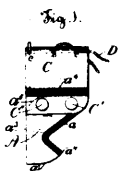


Fig. 1.

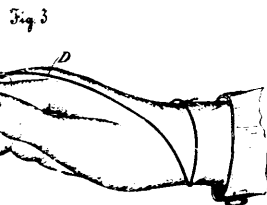


Fig 3

32160 Thompson's Band Cutter.

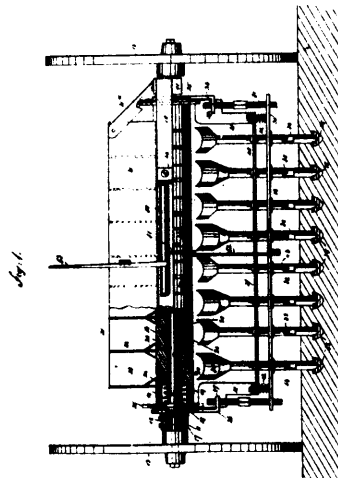


Fig. 1.

32161 Fendel's Grain Drill.

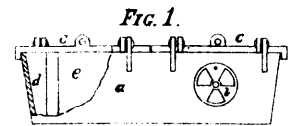


FIG. 1.

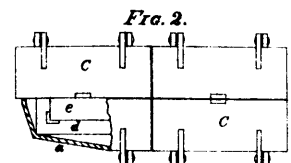


FIG. 2.

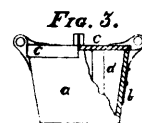
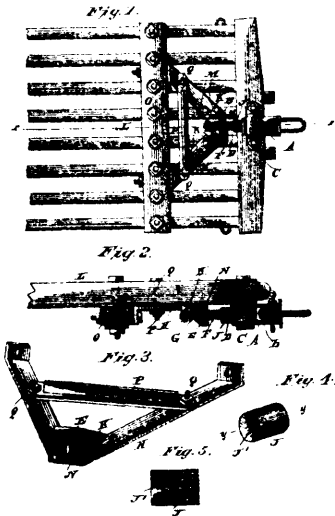
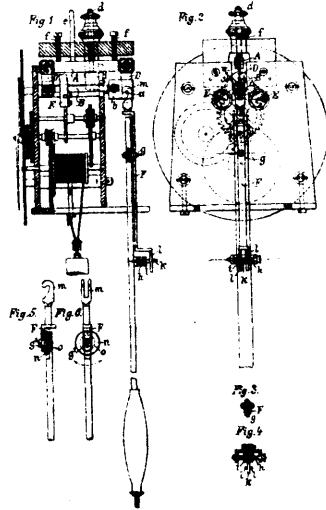


FIG. 3.

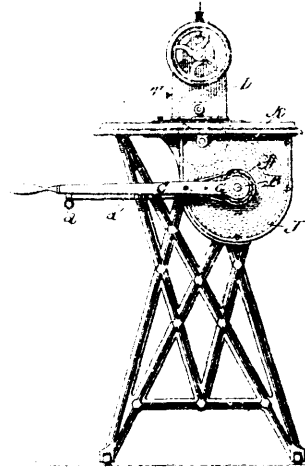
32162 Tresidder's Coal Oil Stove.



32163 Rhule's Car Coupler.



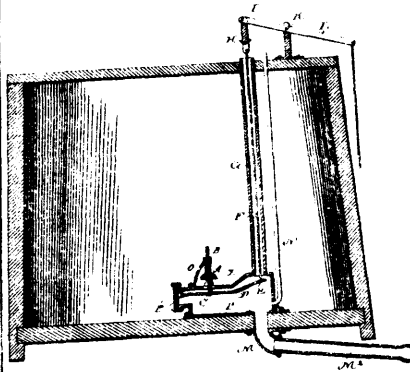
32164 Werner's Means for Suspending the Pendulums of Clocks.



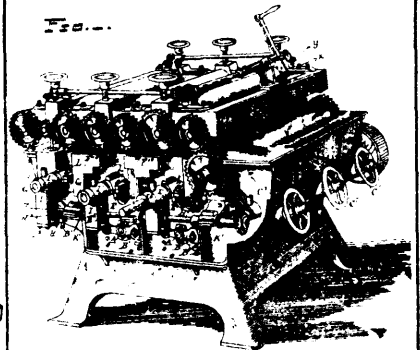
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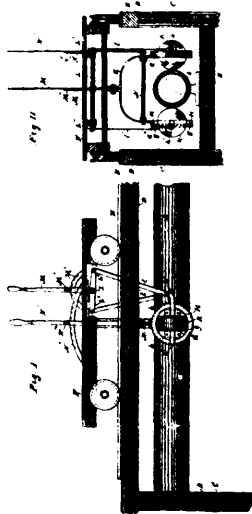
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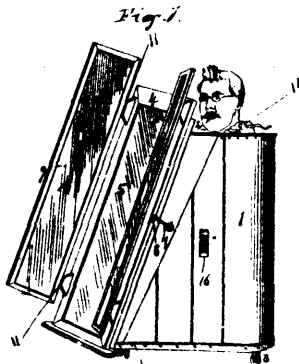
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32168 Carpenter's Machine for Polishing Wood.



32169 Judson's Mechanical Movement.



32170 Evans' Solar Bath.

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