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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. 30,306. Railway. (*Chemin de fer.*)

Eben M. Boynton, West Newbury, Mass., U.S., 29th November, 1888; 5 years.

Claim.—1st. A "bicycle" railway carriage provided with lower compartments for passengers and luggage, substantially as set forth. 2nd. A "bicycle" carriage or car provided with a door at the top to receive, and a door at or near the bottom to discharge freight, substantially as set forth. 3rd. A "bicycle" carriage or car provided with a skeleton metal frame for the conveyance of lumber, and other coarse freight, substantially as set forth.

No. 30,307. Exhaust Nozzle Extension for Locomotives. (*Extension de buse d'équipement pour locomotives.*)

Julius T. Lee, Mattoon, Ill., U.S., 1st December, 1888; 5 years.

Claim.—1st. The combination, with a locomotive stack and stand pipe, of pipes of varying lengths, movably supported in the stack above the stand pipe, and means for moving the said pipes to cause them to register alternately with the stand pipe, substantially as described. 2nd. The combination, with a locomotive stand pipe, smoke box and smoke stack, of a series of pipes of various sizes and lengths held to swing in the said smoke stack, and adapted to be connected at their lower ends with the upper end of the said stand pipe, substantially as shown and described. 3rd. The combination, with a locomotive stand pipe, smoke box and smoke stack, of a series of pipes of various sizes and lengths, and secured to each other, said pipes being pivoted by hangers in, and at the extreme top of said smoke stack, and a rod fastened to the said pipes, and extending to the cab of the locomotive, substantially as shown and described.

No. 30,308. Roller Valve. (*Soupape à rouleau.*)

Julius T. Lee, Mattoon, Ill., U.S., 1st December, 1888; 5 years.

Claim.—1st. In a roller valve, the combination, with a table held in a steam chest and provided with longitudinal strips or tracks, of springs supporting said table, and screw-rods for adjusting said table in the said steam chest, substantially as shown and described. 2nd. In a roller valve, the combination, with a table provided with longitudinal strips or tracks, of springs supporting the under side of said table, vertical rods on which said springs are coiled, said rods also guiding said table, screw-rods screwing into the cylinder, and passing through the steam chest cover, and through the said table, nuts screwing on the outer ends of the said screw-rods, and a collar formed on each screw-rod and resting on top of the said table, substantially as shown and described. 3rd. In a roller valve, the combination, with a cylinder and steam chest, of a table provided with longitudinal strips or tracks, springs on which said table rests, a screw-rod screwing in the cylinder, and passing through the said table, and the steam chest cover, a collar formed on each screw-rod and resting on top of the said table, and a nut having a conical bottom and screwing on the outer end of the said screw-rod, substantially as shown and described. 4th. In a roller valve, the combination, with a steam chest, of a table held adjustably in the said steam chest, and provided with longitudinal strips or tracks, rollers traveling on the said table, a frame in which the said rollers are mounted, said frame being provided with lugs at each end, and springs held on the inside of the said steam chest, and against which operate said lugs on the roller frame, substantially as shown and described. 5th. In a roller valve, the combination, with a cylinder and steam chest, of a slide valve traveling in the said steam chest, a cover fastened on the said slide valve, rollers supporting the said cover, a frame in which the said rollers are mounted to turn a table held adjustably in the said steam chest, and provided with longitudinal strips or tracks, and springs held on the said steam chest and adapted to be engaged by lugs on the said roller frame, substantially as shown and described.

No. 30,309. Toe Weight. (*Contre-poids de sabot.*)

Charles W. Crannell, Oberlin, Kan., U.S., 1st December, 1888; 5 years.

Claim.—1st. In a toe weight, the shank B, the arm *b*₃, perforated wings *b*₅, and the weight C, substantially as specified. 2nd. In a toe weight, the shank B, the weight C, the cap plate D, and the winged sleeve *b*₃, all combined and constructed, substantially as set forth. 3rd. In a toe weight, the combination, of the shank B, the toe weight C, and the cap plate D, all combined substantially as specified.

No. 30,310. Harness. (*Harnais.*)

Albion V. Tourgé, Mayville, N.Y., U.S., 1st December, 1888; 5 years.

Claim.—1st. A metallic harness comprising a collar composed of a two-part and pivotally connected arch-shaped top portion, having adjustment holes in their lower portion, side bars having similar adjustment holes in its upper portions, pivot pins or bolts connecting the respective sections with capability of vertical adjustment, the one on the other, and a bottom-connecting lock hinged to said side bars, a flexible perforated saddle-tree, flexible saddle and girth, a spring connected to the saddle and having perforations registering with the perforations in the tree, perforated hold-back springs pivotally connected at their front ends to the collar, bolts or torrets connecting said hold-back springs and tree, stay springs pivotally connected at their respective ends to the collar, and hold-back springs, trace or tug fasteners, each composed of a two-part hollow box, one part being semi-cylindrical to adapt the same to receive either round or flat traces, spring trace supports, an elastic and pliable metallic back-band having a perforated rear portion, a hinged bifurcated crupper having one arm hinged to the back-band to permit of its lateral movement, and the other end joined to permit of vertical movement, a button for holding the laterally moving arm in locked position, a connecting band or strap removably and adjustably connecting said backband and crupper, a flexible metallic breeching, a sectional hip-trap having perforations in its lower ends to permit of its vertically adjustable connection with the breeching, a connecting strap having a button to engage the perforations in the backband, and having pivotal connection with the sectional hip-strap, braces pivotally connected at their ends respectively to the hip-strap, and breeching traces having longitudinally adjustable cockeye-carrying clamps, and cockeyes hinged to said clamps, and reins having jawed gripping clamp-connections, oppositely-facing snap-hooks to connect with the bridle and a series of hand-grasps, substantially as and for the purpose set forth. 2nd. A metallic collar composed of a two-part arch-shaped top portion having overlapping curved upper ends, and a pivot-hinge connecting the same, a pair of straight side bars pivotally connected to said arch with capability of vertical adjustment thereon a two-part lock-plate having hinge and pivotal connection to the lower ends of the side bars, and devices, substantially as described, for securing said plates in locked position. 3rd. A metallic collar having a jointed arch-shaped spring top portion, straight lower bars having transversely and outward-bent lower ends, means, substantially as described, for pivotally and adjustably connecting the upper and lower parts of the collar, and inwardly-curved sheet metal spring pads or puffs at the lower portion of the collar, and inwardly-curved metallic protecting pads secured to the lower part of the arch, substantially as set forth. 4th. A metallic collar having a jointed arch-shaped spring top portion, straight lower bars having transversely and outwardly-bent lower ends, means, substantially as described, for pivotally and adjustably connecting the upper and lower parts of the collar and inwardly curved metallic protecting pads secured to the lower part of the arch, substantially as set forth. 5th. The combination, with a sectional collar, substantially as described, of the lock herein described, for connecting the lower ends of the neck bars, of a collar consisting of a pair of plates hinged respectively to the lower ends of said neck bars, a pair of slotted plates pivotally connected to said hinge bars, and having headed pins to engage said slots, and a slotted key pivotally connected to one of said slotted plates so as when said slotted plates are connected together by the engagement therewith, of the headed pins to permit of said key being *slidden* between said plates, and engaging one or more of said headed pins and gripping the lock plate, substantially as set forth. 6th. A metallic trace or tug fastener composed of two outwardly-curved parts, the outer part being semi-cylindrical to adapt said fastener to

receive either flat or round traces, said curved pieces being pivotally connected at their inner ends to the neck bar of the collar, and bolts and nuts connecting said parts together, and to the traces, substantially as set forth. 7th. The combination, with a metallic collar and metallic harness saddle, a pair of longitudinally adjustable holdback springs for connecting said collar and saddle, and regulating the distance between the same, and brace springs bracing and connecting said collar to the holdback springs, substantially as set forth. 8th. A metallic harness saddle composed of an arched tree having downwardly and outwardly projecting perforated prongs, a pad composed of a pair of downwardly curved plates of pliable sheet metal, each having upturned edges, and curved or swelled under portion, and connected at the upper part to the tree, and plate springs adjustably connected to said saddle and tree for the purpose of adjusting the pad and tree to fit different horses. 9th. The combination, with a metallic harness saddle, of a metallic spring girth composed of an inner sheet or strip of pliable metal having outwardly-curved edges, an outer band of spring metal fitting between the out-turned edges of the inner band and having studs on their opposite ends, and strips of spring metal hinged at one end to the saddle and having perforated lower ends to receive the studs on the strips connecting the girth to the saddle, substantially as set forth. 10th. The combination, with a metallic harness saddle having a cap or thumb near its lower end, and a loop or hinge at its lower end, of a spring trace-support hooked at its lower end into said loop or hinge, and at its upper end slipped within the thumb on the saddle, substantially as set forth. 11th. A metallic backband, or back-strap, composed of a flexible metallic rear portion having adjustment slots therein, and an under piece of metal having an upwardly-projecting button or stud to engage with said slots, so as to secure the longitudinal adjustment of the backband, and a front spring portion having a rear pivotal connection to the front portion of the band, and front connection on opposite sides of the harness pad, substantially as set forth. 12th. The combination, with a metallic backband, substantially as herein described, of a tubular metallic bifurcated crupper, one of the arms of which has vertical pivotal connection at its front portion to the backband, while the other arm is rigidly connected thereto, of said arms having inwardly-curved ends, or fingers, having each hinge connection with the inner portions, to permit of said fingers having vertical movement, substantially as and for the purpose set forth. 13th. The combination, with a flexible metallic backband, a metallic plate pivotally connected at its front portion thereto, and having up-turned side edges, and at its rear an upwardly-extending button, a tubular metallic bifurcated crupper, one arm of which is at its front end rigidly connected to said pivotal plate, while the other arm of said crupper is at its front end pivotally connected to said pivotal plate, to permit of the lateral movement of said member of said crupper, each of said arms of the crupper having in-turned rear ends pivotally connected to the main portion of the crupper, to permit of said rear ends moving vertically, as set forth, and said button being pivotally attached to the pivotal plate, and having an elongated head to adapt it to hold said crupper in position, substantially as set forth. 14th. A flexible metallic breeching having a curved, or rounded, inner face, out-turned edges, a tension plate spring adjustably secured to the exterior of said curved metallic breeching to regulate the roundness and rigidity thereof, and means for removably connecting said breeching to the backstrap, substantially as set forth. 15th. In a harness, the combination, with a metallic backband having holes in its rear portion, and a flexible metallic breeching of a sectional curved hip-strap having perforated lower ends, and means, as described, for connecting said strap to the breeching, with capability of vertical adjustment thereon, a plate having a button for connecting the same with the backband, and having pivotal connection at or near each end to the respective sections of the hip-strap, substantially as set forth. 16th. The combination, with a flexible metallic breeching, a spring metal hip-strap having vertically adjustable connection with said breeching, clasps or bands having in-turned lips to embrace said hip-strap, and outwardly-extending perforated flanges or wings, braces pivotally connected at their upper ends to said clasps or bands, and extending outwardly therefrom, and pivotally connected at their lower ends to the breeching, substantially as and for the purpose set forth. 17th. The metallic hip-strap herein described, consisting of a pair of curved spring-metal plates, a connecting plate pivotally connecting the upper ends of said hip-strap, and means, substantially as described, for removably connecting said hip-strap, and connecting plate to the backband. 18th. In a harness, the combination, with a tug or trace, of a tubular clamp adapted at its rear end to receive the rear end of the trace, and having a split or bifurcated front end, and exteriorly screw-threaded, as described, an interiorly screw-threaded ring or nut to engage the threads on the clamp and grip the jaws thereof upon the trace, and having outwardly-extending cheeks, or flanges, a cockeye, a tail extending therefrom at right angle, and placed between the cheeks or flanges on the ring, and a pivot-pin, or hinge, connecting the tail on the cockeye, and the flanges on the ring together, substantially as and for the purpose set forth. 19th. The herein described metallic thill-brace consisting of a metallic strap pivotally connected at its rear end to the front end of the breeching, and having a ring at its outer end to which the thill-strap is secured, substantially as set forth. 20th. The adjustable device herein described for connecting main and cross-line reins, consisting of a jawed tube embracing the main line, a ring or nut adapted to reciprocate along said tube and clamp, the jaws thereof upon the line, and a similarly jawed tube pivotally connected to said sliding ring, and having a jaw-gripping ring, or nut, to clamp said tube on the cross line, and thus pivotally connect said lines together, arranged and operating substantially as and for the purpose described. 21st. The device herein described for connecting the front end of a rein to a bridle, consisting of a tubular jawed clamp within which the front end of the rein is inserted, a ring or nut adapted to reciprocate upon said tube to clamp the jaws thereof upon the rein, the oppositely-facing snap-hooks secured to the front end of said end of said tube, arranged and operating substantially as and for the purpose described. 22nd. The rein composed of one or more sections consisting of alternate flat lengths, and rings connecting the same together and to the main portion of the rein so as to form hand grasps, substantially as set forth. 23rd. A cap or cover for enclosing the upwardly-

projecting portion of the terrets, and bolts, and nuts consisting of a perforated base portion to receive the bolt and operate as a washer for the nut, a top hollow portion to receive the nut, and having slotted sides to permit of access to the enclosed nut, substantially as and for the purpose set forth.

No. 30,311. Thill Coupling. (*Armon de limonière.*)

George Brownlee, Jr., Penola, South Australia, 1st December, 1888; 5 years.

Claim.—In a thill coupling, the combination, of the clip or shackle A, having the jaws or eyes a, one of which is provided with a hinged segment a', and the thill iron B having the T-head or trunnion b provided with the disk or flange b', and arc-shaped plate b'', substantially as herein described.

No. 30,312. Blast Pipe. (*Porte-vent.*)

Henry Appley, Limerick, Ireland, 1st December, 1888, 5 years.

Claim.—1st. The improved blast-pipe, constructed substantially as herein described, and having a central steam nozzle a, a surrounding annular steam passage a' communicating therewith, and an annular valve a'' arranged to work in an axial direction or rotatively, and serving to control the escape of steam by way of the said supplementary passage. 2nd. In a blast pipe constructed with a central steam nozzle, and an annular steam passage surrounding the same, an annular valve, such as a', operating substantially as herein described, for controlling the escape of steam by way of the supplementary passage.

No. 30,313. Machine Belting. (*Courroie sans fin.*)

Fenelon B. Brook, Washington, D.C., U.S., 1st December, 1888, 5 years.

Claim.—An edge-laid link, or strip-belt, constructed substantially as described and for the purpose set forth.

No. 30,314. Centrifugal Cream Separator. (*Séparateur centrifuge de la crème.*)

Sven Jonsson, Copenhagen, Denmark, 1st December, 1888; 5 years.

Claim.—1st. A centrifugal machine consisting of the drum G, with supply pipe G', the vanes G'', and the skim milk outlet pipes A, holes a, pegs b', cover H, pipes I and K, spring L, and nut M, substantially as described and shown in the drawings. 2nd. In centrifugal machines, the nut M (or other suitable means as screws, eccentrics, etc.), and a pipe K, substantially as set forth and shown in the drawings. 3rd. In centrifugal creamers, the perfectly closed drum G.

No. 30,315. Thill Support. (*Armon de limonière.*)

Nathan Linney, George Cahill and James Stewart, Watertown, N.Y., U.S., 1st December, 1888, 5 years.

Claim.—The combination, with the clip c and coupling d, of the rearwardly projecting spring g secured to the underside of the axle by the legs of the clip, and nuts thereon, and a catch a secured to the thills, and engaging the free end of the spring to support the thills in a vertical position.

No. 30,316. Furnace, Cooking Range and Stove, etc. (*Calorifère, landier et poêle de cuisine, etc.*)

John Burns, (co-inventor with Frederick J. Gilman), Montreal, Que., 1st December, 1888; 5 years.

Claim.—1st. In a heating furnace, cooking range, or stove, a vertical shifting fire grate, and frame E, operated substantially as described. 2nd. In combination, with a vertical shifting fire grate, a lever b or F having two or more cams to raise or lower the said grate, and a circular head with holes to receive the pin H, substantially as described. 3rd. In combination, with a vertical shifting grate, the double frames E and C fastened only in the centre, as and for the purposes hereinbefore set forth. 4th. In combination, with a dumping fire grate balanced in frame E, a bolt I operate J by a long spindle and handle, as and for the purposes hereinbefore set forth.

No. 30,317. Dynamo Electrical Machine or Motor. (*Machine ou moteur Dynamoelectrique.*)

James Boyce, Baltimore, Md. (assignee of Samuel H. Tacy, New York, N.Y.), U.S., 1st December, 1888, 5 years.

Claim.—In combination with the commutator and brushes of a dynamo-electrical machine, or an electrical motor, a flame intercepting envelope, substantially as and for the purpose specified.

No. 30,318. Blast Pipe and Means for Regulating the Draught Created Thereby. (*Porte-vent et moyens d'en régler le tirage.*)

Henry Appley (co-inventor with John G. Robinson), Limerick, Ireland, 1st December, 1888, 5 years.

Claim.—1st. For use with a locomotive, the improved means, substantially as herein described, whereby the effective action of the blast may be readily varied from the foot-plate or similar conveniently accessible position, such means consisting of the combination of a main steam nozzle a', a supplementary steam passage a'', provision, such as the passages a', for opening communication between the former and the latter, outlets, and suitable connections, such as b, b', b'', b'', b'', for controlling from the operator's position the escape of

steam by way of the supplementary passage *a*. 2nd. The improved blast pipe, constructed substantially as herein described and having a central steam nozzle *a*, an annular steam-passage *a* surrounding the same, an intervening passage *a* for the conduct of the air or other gases to be operated on, and means, such as the movable ported face *a* for partially or wholly intercepting the escape of steam through the steam passages *a*, whilst correspondingly augmenting or concentrating the delivery through the passage *a*. 3rd. In a blast pipe, provided with a central steam nozzle and surrounding annular steam passage, the improved means, substantially as herein described, for enabling a portion of the steam to escape by way of the latter passage, such means, consisting of a casing *a*, mounted to rotate upon its face *a*, and to open communication from the main pipe *a*, through the passages *a* and ports *a* to the interior of the casing *a*. 4th. For use in, and in combination with, the smoke-box of a locomotive, or similar fire-tube boiler, the improved blast-pipe, substantially as herein described, and having at about the level of the lower fire-tubes openings on all its sides, for the admission to the passage *a* of the air or other gases to be exhausted or operated on. 5th. For use in and in combination with the smoke box of a locomotive or similar fire tube boiler, a blast pipe, having a central steam nozzle *a*, a surrounding annular steam passage *a*, and an intervening air passage *a*, the inlet to the latter being arranged at about the level of the lower fire tubes, and being provided with means, such as the movable ported face *a*, whereby the admission of air to the passage *a* may be partially or wholly intercepted.

No. 30,319. Manufacture of Laminated Springs. (Fabrication des ressorts laminés.)

Warnock and Co. (assignees of William E. Rothwell), Ont., U.S., 1st December, 1888; 5 years.

Claim.—As an improvement in the manufacture of laminated springs, the placing of each plate *C* between the dies *A* and *B*, which are suitably fitted into a drop press or other suitable machine, and have the recess *a* and projection *b* made in their face, so that when the said dies are brought together upon the plate *C* they shall form in the said plate the recess *d* and projection *e*, substantially as and for the purpose specified.

No. 30,320. Steam Engine.

(Machine à vapeur.)

The American High Speed Engine Company (assignee of George F. Swain, Calvin L. Swain, William O. Worth and John D. Worth), Cedar Rapids, Iowa, U.S., 1st December, 1888; 5 years.

Claim.—1st. In a steam engine, the cylinders and piston of which have a reciprocating motion perpendicular to each other within a rectangular shell, the combination of an exhaust port wholly within said shell, and adapted to be opened and closed by the movement of the cylinders, steam ports similarly adapted to be opened and closed at their lower extremities, and at their upper ends terminating in separate steam passages in a steam chest, and adapted to be opened and closed at this end by the independent action of a valve having a reciprocating motion through suitable mechanism, substantially as and for the purpose set forth. 2nd. In an engine of the class specified, the combination of the shell having the exhaust port *G* isolated from the steam chest, and the separate steam ports opening at the lower ends in opposite sides of the shell, and at the upper ends into separate passages in a steam chest, the steam chest *M* provided with the valve *N*, and means, substantially as specified, for imparting independent reciprocating motion to said valve, substantially as and for the purpose set forth. 3rd. In a steam engine of the class specified, the combination, with the outer rectangular shell, within which the cylinders reciprocate perpendicularly to the motion of the piston cylinders, joined closely together in the middle at the top and bottom, with an opening in the side for the crank shaft, and provided with a socket at the top and bottom, a wedge-shaped plug in said socket, and a spring adapted to force said plug toward the narrower part of the socket, whereby said cylinders are forced apart and automatically adjusted endwise, substantially as set forth. 4th. In an engine, of the class specified, the combination of the parts *N*, *S*, *E*, *E*, having the bridges *b*, *h*, one of said bridges forming one half of the box for the crank pin, and the other with a recess adapted to receive the other half of the box *h*, wedges in said recess between the half box and the bridge, and means, substantially as specified, for setting up said wedges for the adjustment of said box. 5th. In an engine, of the class specified, the combination of the shell enclosing the working parts of the engine, a hollow base thereof adapted to hold oil and water, and a separating medium between the interior of the said oil and the base to prevent agitation of the oil, but perforated to allow the oil to flow up into the shell, as raised by the water in the base, substantially as specified. 6th. In an engine, of the class specified, the combination of the reciprocating cylinder *O*, having an annular groove in the end thereof, and an adjustable ring seated in said groove, substantially as and for the purpose set forth.

No. 30,321. Boot and Shoe Clasp.

(Agrafe de chaussure.)

Abondius Chapedelaine, Nicolet, Que., 1st December, 1888; 5 years.

Resumé.—Une agrafe de chaussure dans laquelle une attache composée des morceaux en H, A, A et B, réunis fixés sur la partie recouverte D de l'empeigne de la chaussure et d'un ardoillon C ayant une largeur pour passer sous la barre transversale G de l'attache et fixé à la partie recouverte I, le tout tel que ci dessus représenté et décrit.

No. 30,322. Pulley. (Poulie.)

Edward C. Stearns, Syracuse, N. Y., U.S., 1st December, 1888; 5 years.

Claim.—1st. As an improved pulley frame *a*, having solid sides of substantially an inverted U-shape, cast integral with the boss *a* for receiving the suspending eye, and with the journals *b* and strengthened

webbs *b*, the latter extended down the sides of the frame at the parting line of the casting mould, substantially as herein shown and described. 2nd. As an improved article of manufacture, the herein described pulley, consisting of the frame *a*, having the boss *a*, journals *b* and webbs *b* cast integral therewith, in the manner described, and the wheel *c*, having its hub *c* connected to the rim by a solid web *c*, the removable pin *d* and split key *d*, substantially as set forth.

No. 30,323. Mechanism for Transmitting Motion. (Mécanisme de transmission du mouvement.)

George F. Evans, Somerville, Mass., U.S., 1st December, 1888; 5 years.

Claim.—1st. In combination, with two oppositely disposed conical pulleys 2, 3, adapted to grip an endless band 4, which loosely encircles one of said pulley, the screw-threaded shaft 12, guide-rod 16 and the screw-nut 14 apertured to receive the band, and adapted to travel onwise of the pulleys, whereby the belt may be positioned, substantially as described. 2nd. In a device for transmitting motion from one conical or tapering pulley to another, by pressure of said pulleys upon a band arranged to pass between them, the pulleys 2, 3, reduced in diameter at adjacent portions to form the annular recess 17, combined with an endless band which loosely encircles one pulley, and is adapted to enter said recess, when motion is not to be transmitted, substantially as herein specified. 3rd. In combination with the pulley 2 in fixed bearings, the pulley 3 in movable bearings and the endless band 4 which passes therebetween, the horizontal slotted boxes 19, the shafts 22 having screw-threaded ends engaging and moving said journal boxes, the mitre-gears 23 on the other ends of said shafts, and the shaft 25 carrying additional mitre gears 24, meshing therewith, by which the pulley 3 is adjustable in paths of movement transversely of the axis of support of the pulley 2, to increase or diminish the grip upon the band, as herein stated. 4th. The combination with the pulley 2 in fixed bearings, the pulley 3 in movable bearings, and the endless band 4 which passes therebetween, the mechanism, as described, composed of the shaft 34, with its inclined projections or wedges 35 adapted to wipe the supports of said pulley 3, and the actuating hand-wheel 36, whereby movement of the pulley 3 is effected transversely of the axial support of the co-operating pulley 2, to increase or diminish the frictional pressure upon the band, substantially as described.

No. 30,324. Machine for Fastening Traces to Whiffletrees. (Machine pour attacher les traits aux palonniers.)

William J. Stitt, Smith's Falls, Ont., 1st December, 1888; 5 years.

Claim.—The combination of the rod *A*, the button *B* and the spring *C*, substantially as and for the purpose hereinbefore set forth.

No. 30,325. Dress Extender. (Forme de jupon.)

Alain C. Macdonald, Montreal, Que., 1st December, 1888; 5 years.

Claim.—The combination of the pieces *D* and *E*, joined together by the clasps *A* and *B*, and held at a wished for length by the catch *C*, or any other means or process, the whole as above described and substantially as and for the purpose hereinbefore set forth.

No. 30,326. Power Machine Specially Applicable to Elevators. (Force mécanique applicable spécialement aux ascenseurs.)

James Lawrence, Chiswick, N.S.W., 1st December, 1888; 5 years.

Claim.—1st. So constructing them that each end of a ram may receive independent power or pressure in the same direction, substantially as herein described and explained. 2nd. So constructing them that a hollow rod supports a fixed piston head within a hollow ram, and allows of the passage of the power through it to act between said piston-head and the internal end of said ram, substantially as herein described and explained. 3rd. The combination and arrangement with a fixed cylinder, having stuffing box and gland, of a hollow ram having a blank inside end, and whose interior slides upon a fixed piston to form an extra and independent pressure cylinder, substantially as herein described and explained. 4th. The particular combination and arrangement of parts forming a multiplying hydraulic elevator power machine, substantially as herein described and explained and as illustrated in the drawings.

No. 30,327. Attachment of Eye-Glasses to Head Apparel. (Appareil pour attacher les lunettes aux coiffures.)

William H. Brownlow, Brockville, Ont., and Joel S. Warner, Ogdensburg, N. Y., U.S., 1st December, 1888; 5 years.

Claim.—1st. The combination, with the attaching plate having lugs, of a spindle journalled in said lugs, and provided with a coiled friction spring bearing at its outer end against one of said lugs, and the eye-glasses depending from the attaching plate, substantially as set forth. 2nd. The combination, with the attaching plate, of an eye-glass frame, and a lazy tongs connected to the said plate and frame, substantially as set forth. 3rd. The combination, with the attaching plate, having a spindle journalled on its lower or under side, of an eye-glass frame and a lazy tongs connected to the said spindle, and to the spring of the eye-glass frame, substantially as set forth. 4th. The combination, with the attaching plate, having lugs on its under face of the spindle, journalled in said lugs and provided at one end with a coiled spring bearing at its outer end against the adjacent lug of the attaching plate, lazy tongs connected to the attaching plate and an eye-glass frame attached to the other end of the lazy tongs, substantially as set forth.

No. 30,328. Damp Proof Cartridge Case.*(Etui de cartouche imperméable à l'humidité.)*

John C. Butterfield and Tolford C. Batchelor, London, Eng., 1st December, 1888, 5 years.

Claim.—1st. The combination, with a cartridge case of a stuffing box, substantially as described, for the purpose of making a tight or damp proof joint around the fuse or match. 2nd. In a cartridge, the combination, with a shell, having one permanently closed end, of a separate cap for closing in the other end, substantially as herein described and illustrated in the accompanying drawings. 3rd. In a cartridge, the combination, with a shell, having one permanently closed end, of a separate cap provided with a stuffing box for closing in the other end, substantially as herein described and illustrated in the accompanying drawings. 4th. The combination, with a cartridge case, of an exeresence formed in part therewith and adapted to be cut off, substantially as herein described. 5th. The combination, with a cartridge case of a separate cap formed in part with an exeresence, which is adapted to be cut off, substantially as herein described.

No. 30,329. Stays for Garments.*(Buse de vêtement.)*

Enoch C. Bowling and Henry P. Glover, Ypsilanti, Mich., U.S., 4th December, 1888, 5 years.

Claim.—1st. The stay herein described comprising the stiffening-blade D having sheets of gutta-percha tissue lying upon each side thereof, and projecting over the ends and edges of said blade, with the covering fabrics having a like projection and adhering thereto, whereby a stitching edge is provided surrounding the stiffening-blade, as and for the purposes set forth. 2nd. A dress stay comprising a stiffening-blade having a textile fabric covering with interposed impervious coating, the parts adhering together and having the textile fabric stitching edges, substantially as specified. 3rd. The stay herein described comprising the stiffening-blade D having covering fabrics B, B' lying upon each side thereof, and projecting over the edges and ends of said blade, with an intervening sheet of gutta-percha tissue T having a like projection, whereby a stitching edge is provided surrounding the stiffening-blade, as and for the purposes specified. 4th. The herein described method of making garment stays consisting in placing a number of stiffening-blades cut to suitable length, and separated from each other between two sheets of fabric, and an intervening sheet of rubber tissue cementing the whole together, and then separating the blades by cutting the fabric between the blades.

No. 30,330. Smoke Stack. (Cheminée.)

Charles S. Roe, Toronto, Ont., 5th December, 1888, 5 years.

Claim.—1st. A smoke-stack consisting of overlapping flanged sections whose flanged ends are downward, and whose upper edges are formed with a bevel sloping downward toward the interior of the stack, the seats within the flanges being bevelled to conform thereto, whereby, entrance of rain or moisture from without, and escape of drip from within, the stack is prevented. 2nd. In a smoke stack, the combination, of a roof-plate, or collar, the fixed upper portion of the stack which rests thereon, and the swinging lower portion which is pivoted to said roof-plate, and is provided at the bottom with a telescopic drop section, substantially as described. 3rd. The combination of the conical frustum L attached to the top of the stack, the conical frustum M surmounting the frustum L and separated therefrom by an air-passage, the inverted conical frustum N closely attached to the top of the frustum M, and the cone O surmounting the frustum N, and separated therefrom by an air passage, all combined and arranged as described and as shown in the drawings.

No. 30,331. Feathering Paddle Wheel.*(Roue à aubes articulées.)*

David J. Blasler, Westerville, and Henry D. Hager, Rome, N.Y., U.S., 5th December, 1888, 5 years.

Claim.—1st. In a paddle or propeller wheel, a series of floats mounted on radial shafts adapted to turn in their bearings, cam sleeves moving longitudinally on said shafts, and having grooves engaging with pins on the shafts, an adjustable annulus eccentric to, and mounted on, the axis of the wheel, and a connection between the cam sleeves and said annulus, substantially as described. 2nd. The combination, with a series of floats mounted on a series of radial shafts provided with cam pins, or lugs, of sleeves having cam grooves engaging with said cam-pins, an annulus having connection with said sleeves, and a circular bearing upon which said annulus is loosely mounted, substantially as described. 3rd. The combination, with a wheel having radial slotted brackets, of radial shafts having support thereon, and in bearings on the hub, cam sleeves having lugs moving in the slots of said brackets, and provided with grooves which engage pins on the shafts, clasps mounted on the lugs of the cam sleeves, a flanged annulus on which said clasps may slide, a circular bearing on which the annulus may turn, and a set-screw for adjusting the eccentricity of the bearing, and annulus, substantially as described. 4th. The combination, with an adjustable circular bearing through which the wheel shaft passes, of an annulus having a loose connection with a channel in said bearing, a series of radial float shafts having support and turning in bearings on the wheel, radially reciprocating cam sleeves engaging with the float shafts, and loose connections between said sleeves and the annulus, substantially as described. 5th. The combination, with the wheel having radial shafts for the floats, said shafts being provided with cam-pins, of sleeves moving upon said shafts and having spiral cam grooves with which said pins engage, an annular eccentric to said wheel, and engaging with said sleeves, and an adjusting screw engaging with the bearing of said annulus, whereby the eccentricity of the latter may be varied, substantially as described. 6th. The combination, with the shaft having a flanged hub, of slotted brackets bolted to said hub, and to a concentric ring, float shafts having bearing in lugs on said brackets in angle plates on the shaft and in brackets on an outer an-

nulus, cam sleeves having grooves 20 engaging pins 18 on the float shafts, lugs 21 on the sleeves, clasps 22 carried by the lugs, an annulus 24, with which the clasps engage, a circular bearing with which said annulus has loose connection, and a set screw swivelled on the wheel support, and engaging with an arm on said bearing, substantially as described.

No. 30,332. Improvements in Applying Fur, Hair, Wool or other Fibre, or Feathers, to Woven Fabrics or other receiving Surfaces. (Perfectionnements dans l'application de la fourrure, du poil, de la laine ou autre fibre, ou de la plume, aux tissus ou autres canevas.)

John T. Tussand, London, Eng., 5th December, 1888, 5 years.

Claim.—1st. The process, substantially as described, for applying fur to woven fabrics or other receiving surfaces, consisting in detaching tufts from the naturally arranged fur, accumulating such tufts side by side upon a tape, or carrying surface, and laying them spirally around a roller clothed with the receiving fabric, or surface, so that the tufts become attached to the said surface by cement, as herein set forth. 2nd. The process, substantially as described, for applying fur, hair, wool, or other fibre, or feathers, to woven fabrics, or other receiving surfaces, consisting in accumulating the same in tufts side by side upon a tape, or carrying surface, and laying them spirally around a roller clothed with the receiving fabric, or surface, so that the tufts become attached to the said surface, as herein set forth. 3rd. The machine substantially as described, consisting of a guide trough containing the fur, or material, a frame oscillating to and from the mouth of a guide trough a carrying tape or surface of velvet, or like material, carried on the oscillating frame, and a nipping blade also carried on the oscillating frame, the whole so arranged that successive tufts of the fur or material are taken from the trough and accumulated in a continuous line upon the carrying tape, or surface, as herein set forth.

No. 30,333. Improvements in Washing or Bleaching Cakes or Powders. (Perfectionnements dans les gâteaux ou les poudres de lavage ou blanchiment.)

Jules Picot, Paris, Franco, 5th December, 1888, 5 years.

Claim.—In the manufacture of a washing and bleaching matter to be named, the phoenix washing and bleaching cake or powder, the following ingredients:

Carbonate of soda	600	Kilogrammes
Silicate of Soda	216	do
Resin or colophony	4	do
Fatty matter, oleic acid, cocoa-nut oil, tallow fat, or some equivalent	25	do
Eucis	4	do
Caustic soda	207	do

in the proportions described.

No. 30,334. Pie Plate Rim. (Rebord de tourtière.)

Charles A. Crawford, Thomson, Conn., U.S., 5th December, 1888, 5 years.

Claim.—As an improved article of manufacture, a plate rim consisting of a single strip of metal, in the form substantially as shown, having a groove H formed therein, the clamping plate D having flanges I and rigidly fitted to one end of the rim, and the clamping lever E pivoted to the clamping plate D, and adapted to impinge against the rim, all constructed and arranged substantially as set forth.

No. 30,335. Centrifugal Cream Separator. (Crèmeuse centrifuge.)

Sven Jonsson, Copenhagen, Denmark, 5th December, 1888, 5 years.

Claim.—1st. A centrifugal machine, consisting of the lower axle C with pulley, the upper axle B supporting the drum A which is provided with the skim milk outlet a, the cream outlet b, and the vano I, with the tongue I', and affixed to the collar D, with the cup E, and the spring F, and the rod G, or other suitable mechanism, as described and shown in the drawings. 2nd. In centrifugal creamers, the skim milk outlet opening a in the periphery of the drum. 3rd. In centrifugal creamers, the vano I, with the tongue I'. 4th. In centrifugal creamers, the rod G provided with screw, the column D supporting the vano I, with the tongue I, and with the spring F, as described and shown in the drawings.

No. 30,336. Two-Wheeled Vehicle. (Voiture à deux roues.)

Charles C. Spencer, Cortland, N.Y., U.S., 5th December, 1888, 5 years.

Claim.—The combination, with a vehicle body, and a semi-elliptic spring attached to said body, of longitudinal side springs having their forward ends curved upward, provided with a U-shaped bend, and secured to the said semi-elliptic spring, substantially as herein shown and described.

No. 30,337. Mole Trap. (Taupière.)

William N. Wherry, Plymouth, Mich., U.S., 5th December, 1888, 5 years.

Claim.—1st. In a mole trap, a supporting frame consisting of a single upright provided upon one side with vertical guides for the spring-actuated plunger rod, and with a lateral heel extension provided with a ground post upon the other side, substantially as do-

scribed. 2nd. In a mole trap, the combination, of the frame A having the heel L, and ground post M, the plunger rod B, the cross-head E, the teeth F, the lever L, and the trigger K, all combined to operate substantially as described.

No. 30,338. Knife for Planing Machines.

(*Fer de machines à raboter.*)

Alexander C. Dumontor, Detroit, Mich., U. S., 5th December, 1888, 5 years.

Claim.—1st. A planing machine knife having its cutting edge B, formed diagonally across the end of the knife with respect to the parallel side surfaces of the knife-bar A, substantially as set forth. 2nd. A planing machine knife having its cutting edge B, formed diagonally across the end of the knife with respect to the parallel side surfaces of the knife-bar A, said knife-bar being longer on one side than the other, substantially as set forth. 3rd. The combination, with the cylinder, of a planing machine placed at right angles across the bed of the machine, of a knife having its cutting edge formed diagonally across the end of the knife-bar secured to the cylinder with its cutting edge all in the same rotary plane, substantially as set forth.

No. 30,339. Three Roller Mill for Grinding Grain. (*Moulin à blé à triple rouleaux.*)

Joseph L. Willford, Minneapolis, Minn., U. S., 6th December, 1888, 5 years.

Claim.—1st. The combination in a three roller mill, of a centre roll, stationary boxes supporting said roll, upper and lower rolls, spring controlled levers supporting said upper and lower rolls, belt pulleys on all of said rolls, arranged on the same plane, a spring controlled tightener pulley in the same plane with the said road pulleys, and an open belt passing around said tightener pulley and all of said roll pulleys, substantially as described. 2nd. The combination, in a three roller mill, of a centre roll, upper and lower rolls, pivoted spring controlled levers supporting said upper and lower rolls, means for simultaneously moving said rolls towards or from the centre roll, belt pulleys on all of said rolls in the same plane, a spring-controlled tightener pulley in the same plane with said belt pulleys, and an open belt passing around said tightener pulley and around all of said belt pulleys, substantially as described. 3rd. The combination, with the centre roll, of the pivoted levers carrying the upper and lower rolls, a single spring tightener controlling each pair of levers, the shaft carrying the double eccentric arranged between the ends of said levers, bearing blocks on said levers bearing directly on said eccentrics, and means for rotating said shaft. 4th. The cast metal casing 2, formed in one piece, and having openings in its opposite walls, through which the rolls may be inserted or removed, substantially as described. 5th. In a three-roller mill, the cast metal casing having in its opposite walls the openings 20, through which the rolls may be inserted or removed, and the offsets 22, 24, in the upper and lower parts of said openings, adapted to receive the journals of the upper and lower rolls, as set forth. 6th. The combination, in a three roller mill, with the casing having openings in its opposite walls, through which the rolls may be inserted or removed, of the upper and lower rolls, the centre roll and the plates covering the openings in the casing, and having journal boxes receiving the journals of the centre roll, substantially as described. 7th. The cast metal casing 2, having openings through its opposite walls, through which the rolls may be inserted or removed, and offsets from said openings adapted to receive the roll journals, substantially as described. 8th. The combination in a roller mill, with the belt pulleys and belt, of the tightener lever, the idler pulley, the independent journal boxes supporting said pulley, and means for adjusting either of said boxes longitudinally, or said lever, for the purpose set forth.

No. 30,340. Machine for Sawing Wood.

(*Machine à scier le bois.*)

Charles Davis, East Saginaw, Mich., U. S., 6th December, 1888; 5 years.

Claim.—1st. The combination of two or more saws secured adjustably in a horizontally moving frame, with the pitman I, crank J and shaft K, and the bent table bars O, substantially as herein shown and described. 2nd. A wood sawing machine, in which the saw frame is hinged to the head bar F, which is supported by the guide rods G, sliding through lugs on the posts A, and which is operated by the pitman I and the crank J on the shaft K, and supported by the arm R and cord G, all substantially as described and for the purposes set forth.

No. 30,341. Shaft Supporter.

(*Tuteur de limonière.*)

Henderson M. Powers, Lancaster, Penn., U. S., 6th December, 1888; 5 years.

Claim.—A shaft or thill support, consisting of arm C, rod D, eye G, clamp H and screw I, all arranged and combined substantially as and for the purpose specified.

No. 30,342. Vertical Mule Spinner.

(*Machine à filer verticale.*)

Herbert T. Bardwell, Springfield, Mass., U. S., 6th December, 1888; 5 years.

Claim.—1st. An upright mule for drawing and spinning yarns from rovings, having a suitable upright frame, substantially as described, vertical racks, as 462, secured on the ends of said frame, a carriage, substantially as described, having a reciprocating vertical movement on said frame, a shaft, as 467, having a rotary motion on each end of said frame, a ratchet gear, as 468, hung on said shaft and having an engagement with said racks, a series of roving delivery rollers, substantially as described, hung on opposite sides of said

frame, having a geared connection with said shaft 467, and winding pulleys, and a series of ropes connecting said pulleys and carriage, whereby the latter is given said vertical movements, and said delivery rollers are given the required rotary motion, combined and operating substantially as set forth. 2nd. An upright mule for drawing and spinning yarns from rovings, having a suitable upright frame, substantially as described, vertical racks, as 462, secured on the ends of said frame, so that they are capable of vertical adjustment, a carriage, substantially as described, having a reciprocating vertical movement on said frame, a shaft, as 467, having a rotary motion on each end of said frame, a ratchet gear, as 468, hung on said shaft and having an engagement with said racks, a series of roving delivery rollers, substantially as described, hung on opposite sides of said frame, longitudinal shafts, as 375, rotating in suitable bearings on opposite sides of said carriage, having drums 471 thereon, a series of roving spools on opposite sides of the carriage resting on said drums, said shafts 375 and roving delivery rollers, having a geared connection with said shaft 467, and winding pulleys and a series of ropes connecting said pulleys and carriage, whereby the latter is given said vertical movements, and said delivery rollers and drums and spools are given the required rotary motion, combined and operating substantially as set forth. 3rd. The carriage, consisting of several pairs of plates, substantially as described, certain of which have thereon the arms g, united by the longitudinal angle-irons 308 and 324 secured to the opposite edges of said plates, substantially as set forth. 4th. The carriage, consisting of several pairs of plates, substantially as described, having laterally-projecting webs formed on their inner opposite sides, guide-rolls, substantially as described, hung to rotate between said plates, having an engagement with the edges of the post of the frame of the machine, which extends between said plates, and longitudinal angle-irons 308 and 324 secured to the opposite edges of said plates, substantially as set forth. 5th. The frame posts of the machine, as 461 and 277, having fixed on the sides thereof, one or more punter cups v, having elastic material, therein, combined with the frame plates, as 463 and 313, having the lateral projections h thereon for engagement with said cups, when the carriage reaches its lowest point, substantially as set forth. 6th. The frame plates of the carriage of the machine, as 463 and 313, having on their sides the cam t and the projections v, combined with the vibratory levers 187 and 236, and plungers 263 and 221 attached to the head of the machine, substantially as set forth. 7th. The carriage, having a series of ropes attached thereto, substantially as described, passing over rollers in the frame of the machine, a counter-balancing weight 500, hung on said ropes of less weight than the carriage, and capable of a vertical movement in the frame of the machine, coinciding inversely with the movements of the carriage, combined with two winding scrolls, as 190 and 205, and a rope having its ends attached to said scrolls, and passing over and engaging with said counter-balancing weight, substantially as set forth. 8th. The combination, with the counter-balancing weight 500, and the carriage to which it is suspended, of a winding scroll, 190 and a like scroll 205, both on one shaft, and a rope having its ends attached to said scrolls, passing over and engaging with said weight, said scroll 205 being capable of adjustment on its shaft, to cause the end of the said rope, which is attached thereto, to be wound on to the higher or lower parts of the scroll, substantially as set forth. 9th. The main shaft 183 of the machine, having a driving gear 142 fixed thereon, a loose sleeve 113 on said shaft, having a driving gear 130 fixed thereon, combined with a driving shaft, as 141, having a geared engagement, substantially as described, with said gears 137 and 142, and a driving pulley thereon, having a frictional engagement with said shaft, substantially as set forth. 10th. The spindle driving shaft 82, having a connection with the pulley 410 on the main shaft 183, as described, and the shipper-rod 34, having the arm 406 thereon, and a slot therein and the collar 64 thereon, having an arm extending under said rod, combined with a pin 415 supported on a yoke, as described, and capable of a movement towards and from said rod, a rocking-arm 61, with which said arm 406 engages two rocking arms, as 420 and 421, engaging with said yoke to move said pin against said rod, a spring 425 to move said yoke and pin upward, a shaft 67 hung in bearings attached to a movable yoke-piece 422 under the bed of the machine, a spring 423 to lift said yoke piece and shaft 67, a collar 68, in shaft 67, having two arms, as o₂ and o₁ thereon, a worm gear 69, having pin holes in its side, a pin o₂ fixed in said gear, and a pin o₁ adapted to be placed in any of said holes, a pulley, as 220, fixed on shaft 67, having a cord attached thereto, a weight, as 51, hung on said cord and the worm 70 on clutch 409, on the main shaft 183, substantially as set forth. 11th. The spindles 428, arranged in two inclined rows, having their steps in a rail on the lower angle-irons 80, outside of the standards, and their bolsters in rails secured to the upper angle-irons 79 on said standards, whereby said spindles cross each other over the axial line of the driving drum, a single driving drum 84, having bands thereon driving said two rows of spindles, and rods, as 432 and 434, extending longitudinally by the sides of the spindle whirrs, combined and operating substantially as set forth. 12th. Yarn-building mechanism, consisting of two parallel rods 15 and 16 capable of a rocking motion in suitable bearings on opposite sides of the machine, and having wire-supporting arms thereon, having suitable weights attached to said rods, substantially as described, to swing said arms and wires towards the yarns, combined with a cam, as 340, having a rotary motion imparted to it by the downward motion of the carriage, substantially as described, a tube 38, enclosing the rod 106, whose lower end rests on said cam, and a rock-shaft 47, having an arm thereon, connected pivotally with said tube, and a second arm thereon connected with each of said shafts 16, substantially as set forth. 13th. The carriage, having the drive-chain 37 attached thereto, a shaft 33, having the chain-wheel 212 thereon, with which said chain engages, having a geared connection, substantially as described, with a shaft v, the cam 340 secured on the last-named shaft, the rod 106 passing through the tube 38 and having an internal screw-connection with the latter, and having its lower end resting on said cam, combined and operating substantially as set forth. 14th. The rotating cam 340, the tube 38, having a pivotal connection with the arm 42, of the rock-shaft 47, the rod 106, having a screw-connection with the interior of said tube, and having one end resting on said cam, and adjustable by means of its screw to move said tube to different vertical positions, combined with a rock

shaft 18, a shaft 163, having a geared connection with said rod 164; a reciprocating ratchet and pawl located on shaft 163, and an adjustable connection, substantially as described, between said ratchet and pawl, and an arm on said rock-shaft 18, substantially as set forth 15th. The tube 38, the cam 310, the rod 166 having a spline groove thereon, the gear 161 having a key-connection with the gear in said rod, the shaft 163, having a geared engagement with gear 164 and having thereon a ratchet and pawl, substantially as described, having a slotted arm 91 thereon, an eccentric sleeve r, through which said shaft passes, having an arm thereon by which to rotate it, combined with the rock-shaft 18, having a slotted arm 36 thereon connected by a bar 97 with said arm 99, two vertical plungers 221 and 223 engaging with arms on said rock-shafts, the carriage engaging said plungers in its downward movement and the rock-shaft 47 connected with said tube 38, substantially as set forth. 16th. The shaft 11, having a connection with the main shaft 183, as described, and having a scroll pulley 133 fixed thereon, having a weight 214 connected therewith by a cord 172, the drum-shaft 82, having a belt connection, as described, with said shaft 11, the ratchet wheel 144 fixed on the last-named shaft, a pawl 143, having a bar 178 pivotally connected therewith, having a catch-block at thereon, combined with the rock-18, having an arm 179 thereon, with which said bar engages, substantially as set forth. 17th. The shaft 11, having the freely rotating pulley 282 thereon, the hubs 159 fixed on said shaft, on each side of said pulley, having arms thereon to engage with said pulley, two coil-springs 160, having one end attached to said hubs and their outer ends attached to said pulley, near its rim, combined with the drum-shaft 82, having a belt connection with said pulley 282, substantially as set forth. 18th. The carriage having on one of its frame-plates the projecting cam 1, the spring-actuated pawl 113, the bar 178, the elbow lever 187 capable of engagement with said cam, and having one arm engaged with said bar, combined with the shaft 11, and the ratchet-wheel 144 on said shaft, substantially as set forth 19th. In combination, the rock-shaft 47, the rock-shaft 204 having a connection with said shaft 47 by the bar 21, as described, the levers 219 and 256 attached to said shaft 204, the carriage having the cams r and s on the frame-plates thereof, as described, capable of engagement with said levers, and the rods 16 having the building-wire arms thereon, and having a connection, as described, with an arm 22 on said rock-shaft 47, substantially as set forth. 20th. The tube 34 having a collar 37 thereon, the shipper-rod 34 having an arm 341 thereon capable of engagement with said collar, the plunger 114 having an engagement with an arm 164 on the shaft 18, an elbow-lever 287 having an engagement with a collar on said plunger, combined with said shipper-rod having a collar 118 thereon, with which said elbow-lever 287 has an engagement, substantially as set forth. 21st. The shipper-rod 34 having a pin-socket in its side, as described, combined with the stop-pin 399 having an engagement in said socket in the said shipper-rod by the action of a spring thereon, substantially as set forth. 22nd. The lever 210 pivoted on the bed-plate 1 and having a vibratory motion in a horizontal plane, the shipper-rod 34 having a pivotal connection, as described, with one end of said lever, the longitudinal shipper-rod 335 having the spring 206 thereon, the collar 208 having a free longitudinal movement on said rod 335, and a pivotal connection with one end of the lever 210, and having a fixed hook thereon, as described, a clutch-arm 131 fixed on said rod 335 having a hook thereon to engage with the hook on said collar, combined with the shaft 11 having the winding-screw 133 thereon, and a clutch 240 with which said arm 131 engages, substantially as set forth. 23rd. The gear 35 provided with ratchet-teeth, as described, a pawl 405 pivoted at the side of said gear and engaging with said teeth, a spring to swing said pawl against said gear, combined with the shipper-rod 34 having a pin thereon for engagement with said pawl, substantially as set forth. 24th. The shipper-rod 34, the clutch-arm 131 having a spring-hook 438 on its collar, combined with the gear 211 having lateral projections on its rim, and a ratchet-wheel 222 fixed on a shaft side by side, an elbow-lever 221 hung to rotate freely on said shaft, and having pivotally connected to one arm thereof, a lever 223 having a limited vibratory movement capable of engaging with said spring-hook, and two independently acting pawls to engage with said ratchet, a saddle-spring engaging with pins on said pawls, a spring attached to said elbow-lever and acting against one end of said lever 223, substantially as set forth. 25th. The combination with the gear 211 having the projections *a* and *b* on the rim, and the ratchet 222, of the elbow-lever 224 having one arm engaging with said projections, and having pivotally connected to its second arm, a lever 225, having a limited vibratory motion, two pawls 359 and 361, a spring engaging with pins on said pawls, and a spring on said elbow-lever engaging with one end of the lever 223, substantially as set forth. 26th. The gear 211 having the projections *a* and *b* on the rim, the ratchet-wheel 222 having sockets in each tooth, as described, combined with the elbow-lever 224 having one arm engaging with said projections, and having pivotally connected to its second arm, a lever 225 having a limited vibratory motion, the pawls 359 and 361, the latter having a lip thereon engaging in said sockets in the ratchet-teeth, a spring engaging with pins on said pawls, and a spring on said elbow-lever engaging with one end of said lever 223, substantially as set forth. 27th. The vertical shipper-rod 132 having a collar 124 near its lower end, the pin 399 engaging with the shipper-rod 34, an elbow-lever 143 having one arm thereof engaged by said collar, and its second arm engaging with said pin, combined with the carriage having an engagement with said rod 132 during its upward movement, substantially as set forth. 28th. The shipper-rod 34, a spring, as described, to move said rod longitudinally, the drum-shaft 82 having the friction-collar 13 thereon, a collar on said rod 34 having a bunter-arm 33 thereon, a slotted hook lever 290 pivoted on the bed-plate by the side of the rod 34 having its open end opposite the end of said bunter-arm, a vertical rocking shipper-rod 11 having an arm 288 thereon capable of vibratory motion in a horizontal plane, in which is a spring-actuated pin capable of engagement with the hook in said lever 290, a spring 292 to hold the free end of said hook-lever upward, and a clutch-arm 12 on said rod 10, engaging with the friction-collar 13 on said drum-shaft, combined and operating substantially as set forth. 29th. In combination, the shipper-rod 10, the arm 288 thereon having the pin 399 bearing on the end of a spring under said arm, the pivoted hook-lever 290 having its end slotted to receive said arm, and having a hook thereon to engage said pin, combined with the shipper-rod 34

having the bunter arm 393 attached thereto, or a spring to hold the free end of said lever upward, substantially as set forth. 30th. The shipper-rod 34 having a slot thereon provided with an off-set at one end thereof, as described, and carrying the horizontal arm 129, the spring-actuated pin 301 engaging with said slot, and having a collar 472 thereon, a shaft 393 whose lower end is capable of engagement with said arm having a rotary motion parallel with said pin, and having a disk thereon provided with a cam-projection to engage said collar and lift said pin, and having a stop-pin *a* thereon, and a nut-loy thereon having a cord attached thereto, and carrying a crown gear 157, and a spring 414 to force said shaft downward, combined with the worm 125 on sleeve 113, and a weight attached to said cord, substantially as set forth. 31st. The shipper-rod 34 having a slot thereon with one end off-set, as described, and having the arm 351 thereon, combined with the tube 33 having said tube, and with the rods 16 on which are said building-wire arms, the pin 401, engaging in said slot, and the rotating disk 131 on shaft 393 having a cam projection thereon to engage with and gradually lift said pin, and means, substantially as described, for imparting a rotary motion to said disk, combined and operating substantially as set forth. 32nd. The shaft 18 having the sliding clutch 167 thereon, and the arm 163 extending from a loose clutch-sleeve on said shaft, the horizontal shipper-rod 19 having collars 168 and 169 thereon, a lever 170 pivoted centrally on the machine and having engagement with said rods, and with said clutch, and elbow-lever pivoted under the driving-shaft 141 and having engagement with a sliding friction-collar 256, a suitable connection, as described, between said arm 163 and said elbow-lever, and a spring, as 151, to swing the latter, combined and operating substantially as described, combined with the pulley 282 having a bolt connection with said friction pulley, a spring-connection as described with the shaft 11, and a limited rotary motion on the last named shaft, substantially as described. 33th. The drum-shaft 82, the weight 214, and an intermediate shaft, as 11, capable of rotary motion by said weight, and having a connection with said drum-shaft, whereby its said rotary motion is communicated to the last-named shaft, and the spindles while the carriage descends, combined and operating substantially as set forth. 35th. The shaft 11 having a sleeve 22 thereon on which is a clutch 230, and a gear 85, and the main shaft 188 having a geared connection with said last-named gear, combined and operating substantially as set forth. 36th. The shipper-rod 339, the spring 29, and the shipper-arm 231 thereon, said spring moving said rod in one direction, and the shaft 11 having the clutches 225 and 230 thereon, said arm 231 engaging with the latter, combined and operating substantially as set forth. 37th. The main shaft 183, the clutch 25 having a free rotary motion thereon, and having a gear 35 fixed thereto, the sleeve 113 having a free rotary movement as described on said main shaft, the sliding clutch 9 having a key-connection with said sleeve, and capable of engagement with one end of said clutch 25, and the shipper-rod 34 having an arm 394 engaging with said sliding catch, combined and operating substantially as set forth. 38th. Main shaft 183, the clutch 25 having a free rotary motion thereon, and having a gear 35 fixed thereto, the clutch 59 having a sliding key-connection with said main shaft, and capable of engagement with one end of said clutch 25, the shipper-rod 34 having an arm thereon, as described, engaging with said clutch 59, combined and operating substantially as set forth. 39th. The main shaft 183, the clutch 409 in which said shaft turns freely, having thereon the pulley 414 and worm 70, and capable of engagement with said clutch 59, combined with the shipper-rod 34 having an arm engaging with said clutch 59, substantially as set forth. 40th. The shaft 30 having the winding screws 190 and 205 thereon, which are connected by ropes, as described, with the carriage counter balancing weight, said shaft 30 having a worm and gear connection, as described, with the gear 35, combined and operating substantially as set forth.

No. 30,343. Circular Saw Sharpener and Gunning Machine. (*Machine à affûter etvider les scies rondes.*)

John Mealey, Fairville, N.B., 6th December, 1898; 5 years.

Claim 1st In a saw sharpener and gunning machine, the saw rest G provided with the Shank H, the bearing I, and the saw clamp holder K, having a central aperture G², in combination with the saw clamp H, consisting of the recessed plate H¹, the clamping tooth H², the bolt H³, the nut H⁴, and the spindle H⁵, which fits into said central aperture G² of the saw clamp holder, substantially as shown and described. 2nd. In a saw sharpener and gunning machine, the recessed plate H¹ provided with the spindle H⁵ with which said plate turns, in combination with the pivoted clamping piece H², the bolt H³ on which said clamping piece H² is held, and the nut H⁴, for screwing said clamping piece H² against the saw plate held on said recessed plate H¹, substantially as shown and described. 3rd. In a saw sharpener and gunning machine, the combination, with a bevelled grinding wheel of the carriage O held adjustably on a bed-plate, the carrier P fulcrumed on said carriage, the slotted arm Q fulcrumed on said carrier, a plate S held to slide on said slotted arm Q, a rod T adapted to be secured to said plate S, and the lever U fulcrumed on the carriage O and pivotally connected with said rod T, to move said plate S forward and backward, so that the saw, supported on the plate S is moved to or from said grinding wheel, col. substantially as shown and described.

No. 30,344. Letter Press Printing and Numbering Machine. (*Machine à imprimer et pagner*)

David Carlaw, Glasgow, Scotland, 6th December, 1898; 5 years.

Claim 1st In a letter press printing and numbering machine for numbering and printing sheets or tickets on one or both sides in a continuous manner from webs of paper, or other fabric, the construction and use of continuous rotating tubular printing cylinders or rollers B, B, having numbering disc mechanism mounted in frames D within them, which sequentially print the numbers through

processes *h* formed in the cylinders *B*, *h*, the letter press being printed by segmental stereotyped or electro plates secured on the outer surface of the tubular cylinders *B*, *h*, substantially as herein described. 2nd. In a continuous letter-press printing and numbering machine, the numbering of each strip of the sheet or ticket *a* on one or both sides from a web *a*, in continuous sets of 1 to 50, or 1 to 100, by means of two small narrow discs or wheels *b*, *b*, formed with numbering teeth or projections, and actuated by ratchet wheels and pawls, and fittings fitted in a light frame *D* mounted within the hollow printing recessed cylinders *B*, *h*, substantially as herein described and shown. 3rd. In a continuous letter-press printing and numbering machine, the numbering of each strip of the sheet or tickets *a* on one or both sides from a web *a* in continuous sets of 1 to 100, by means of three narrow discs or wheels *b*, *b*, *b*, formed with numbering teeth, or projections, and actuated by ratchet wheels, and pawls and fittings fitted in a light frame *D* mounted within the hollow printing recessed cylinders *B*, *h*, substantially as herein described and shown. 4th. In a continuous letter-press printing and numbering machine from webs of paper, or other fabric *a*, the printing and numbering of two, three, or more sets in the width of leaves of check books, tickets, or labels *a*, sequentially on one or both sides in continuous strips at the same time by disc numbering mechanism mounted in a frame *D*, arranged within hollow recessed cylinders *B*, *h*, substantially as herein described. 5th. In continuous letter-press printing and numbering machines, the construction and arrangement of two or of three numbering discs *b*, *b* and *b*, *b*, *b*, and their fittings within a frame *D* mounted in cylinders *B*, *h*, for printing the numbers of 1 to 50, or 1 to 100, successively on sheets or strips of paper or other fabric on one or both sides, substantially as described and shown. 6th. In a continuous letter-press printing and numbering machines, the construction or arrangement of a rotating hollow printing cylinder, or axis *h*, *h*, with two or more sequential numbering discs *b*, *b*, *b* along them, either with, or without, segmental stereotyped plates *B* on them for the successive numbering and printing on one or both sides of two or more corresponding strips of paper, or other fabric, for sheets or tickets, substantially as herein described and shown. 7th. In continuous letter-press printing and numbering machines, the cutting or perforating of sheets or strips of paper, or other fabric, transversely by means of rotating cylinders *E*, *E*, *E* with stationary or radially reciprocating and cutting or perforating longitudinal serrated blades *e*, *e*, and slit bars *e*, *e* after being printed or numbered transversely into sheets or tickets, substantially as described and shown. 8th. In continuous letter-press printing and numbering machines for webs of paper, or other fabric, the construction and use of cutting disc cylinders *E*, *E*, *E* with longitudinal serrated blades *e*, *e*, and slit bars *e*, *e* mounted to them parallel to their axis *E*, and either made stationary or radially reciprocating for cutting or perforating the sheets or tickets transversely from the web, substantially as herein described.

No. 30,345. Windmill. (Moulin à vent)

Albert G Nagol, Forman, Dak., U.S., 6th December, 1888, 5 years.

Claim.—1st. In a windmill, the combination, with the wind wheel *G* composed of hub *p*, the arms or spokes *q*, and the buckets *H* of the doors *h* hinged to the buckets, the coiled spring *h*, and the plate *h*, substantially as specified. 2nd. In a windmill, the combination, with the buckets *H*, doors *h* hinged to the buckets, and springs *h*, substantially as specified. 3rd. In a windmill, the combination, with the buckets *H*, the doors *h* hinged to the buckets, and the springs *h* of the sleeve *J* having a disk *I*, the ropes or chains *M*, and the rope of chain *L*, and drive rod *E*, substantially as specified. 4th. In a windmill, the combination, with the wind wheel *G* composed of the central hub *p*, the radial arms *q*, and the buckets *H*, the doors *h* hinged to said buckets, the coiled springs *h*, the pulleys *h* of the sleeve *J* having guide plate *i* and disk *i*, the arm *j*, and having a disk *K* having the lips *k*, the ropes *M*, and the rope *L*, and the drive rod *E*, substantially as specified.

No. 30,346. Stopper for Bottles, Holding Powders, liquids and other substances. (Bouchon de bouteille propre aux poudres, liquides et autres matières.)

Henry G Boston, Piccadilly, York, Eng, 6th December, 1888, 5 years.

Claim.—In a bottle stopper, the combination, of the stopper *D* having valve *E*, and weight *H*, and of a cap *C* having aperture *F*, and metallic piece *B*, as described and for the purpose set forth.

No. 30,347. Life Boat. (Canot de sauvetage.)

Henry T. Wright, Walden, N.Y., U.S., 7th December, 1888, 5 years.

Claim.—1st. In a life-boat, a hull shaped as described, having a narrow and deep central portion for carrying the weight, and bulging outwardly at the water line, and outwardly extending portions being provided with air-tight compartments, as set forth. 2nd. The herein described life-boat having the floor *o* below the water line, in combination with the keel *o* extending up within the hull, meeting and supporting said floor, and forming therewith, and with the hull the two air-tight compartments *s*, *s*, substantially as set forth. 3rd. In a life-boat, the hull constructed as described with the central longitudinal compartment *t* having its floor below the water line, and enclosed above by the rounded deck, and the forward and after compartments *u* extending above said deck, enclosed by the raised and inclined portions of the hull, and provided with the entrance doors *v*, substantially as set forth. 4th. A life-boat having the central longitudinal compartment, or cabin *t*, enclosed by the rounded deck, and having its floor *o* below the water line, the two series of seats *l* having their tops below the water line and the side air-tight compartments *u*, said parts being arranged substantially as set forth for combined buoyancy and stability. 5th. In a life-boat, the hull enclosed by the rounded deck, substantially as described, said hull and deck being constructed of the inner and outer shells *1* and *2* of metallic plates, and the interposed elastic stratum *3*, substantially as set forth. 6th. In a life-boat, the combination, with the hull, and a

performed plate *z*, secured thereon, of a perforated dish shaped plate larger than plate *z*, which is secured to the inner side of the hull, a valve between said plate adapted to cover the openings in the inner plate, and a spring acting to hold the valve away from said openings, so that air is permitted to pass freely, but water from the outside acts to carry the valve against the inner openings, thereby preventing the entrance of water into the hull. 7th. The combination, with the hull, and a perforated plate *z* secured thereon, of a perforated dish-shaped plate larger than plate *z* which is secured to the inner side of the hull, a valve between said plates adapted to cover the openings in the inner plate, a spring acting to hold the valve away from said openings, so that air is permitted to enter, but the passage of water through the inner plate is prevented, and a drainage pipe, whereby water entering between the plates is conducted away.

No. 30,348. Thill Coupling.

(Armon de 1 manibre.)

Henderson M. Powers, Lancaster, Penn., U.S., 7th December, 1888, 5 years.

Claim.—1st. In a thill coupling, the clip plate *H*, the spring *M*, and the set screw *R*, substantially as specified. 2nd. In a thill coupling, the clip plate *H*, and the spring *M*, formed and combined substantially as and for the purpose specified. 3rd. In a thill coupling, the clip plate *H*, the bracket *S* having an eye *U*, and safety strap *V*, as set forth.

No. 30,349. Dynamo-Electric Machine and Electro-Motor. (Machine dynamo-électrique et électro-moteur.)

William Main, Brooklyn, N.Y., U.S., 7th December, 1888, 5 years.

Claim.—1st. A ring-armature wound with coils developing magnetic poles alternating in polarity as the armature is traversed circumferentially, in combination with a field magnet extending through the open centre of the armature and having its contrary poles disposed adjacent to the armature on opposite sides thereof. 2nd. A ring-armature wound with coils developing magnetic poles alternating in polarity as the armature is traversed circumferentially, and a commutator to which the terminals of said coils are connected and which is adapted to alternately reverse the current in each coil, and to effect successively the reversals of current in the successive coils, in combination with a field magnet extending through the open centre of the armature, and having its contrary poles disposed adjacent to the armature on opposite sides thereof. 3rd. A ring-armature wound with coils developing magnetic poles alternating in polarity as the armature is traversed circumferentially, in combination with a field magnet extending through the open centre thereof, and formed with radial pole pieces disposed equidistantly around the circumference of the armature with the poles of contrary polarities on opposite sides of the armature. 4th. A ring-armature wound with coils developing magnetic poles alternating in polarity as the armature is traversed circumferentially, in combination with a field magnet having its middle portion or core extending through the open centre of the armature, in a direction substantially parallel with the axis of rotation, and having its contrary poles disposed adjacent to the armature on opposite sides thereof, and an exciting coil for said field-magnet arranged to inclose said core and in inductive proximity thereto. 5th. A ring-armature wound with coils, developing magnetic poles alternating in polarity as the armature is traversed circumferentially, in combination with a field magnet having its middle portion or core extending through the open centre of the armature, in a direction substantially parallel with the axis of rotation, and having its contrary poles disposed adjacent to the armature on opposite sides thereof, and an exciting coil for said field-magnet arranged with the armature, and inclosing said core in inductive proximity thereto. 6th. The combination, with a non-rotative ring-armature wound to form circumferentially alternating poles, of a rotatively mounted field-magnet extending through the open centre of the armature, and having its contrary poles disposed adjacent to the armature on opposite sides thereof. 7th. The combination, with a non-rotative ring-armature wound to form circumferentially alternating poles, of a rotatively mounted field-magnet extending through the open centre of the armature, and having its contrary poles disposed adjacent to the armature on opposite sides thereof, and a non-rotative exciting coil for said field-magnet arranged to inclose the same. 8th. The combination of a ring-armature consisting of a succession of oppositely wound coils arranged in a circle with their axes parallel to the axis of rotation, with a field magnet extending through the open centre of the armature, and having pairs of poles of contrary polarity disposed oppositely to one another, and adjacent to the opposite sides of the armature, those of one polarity being disposed on one side of the armature, and those of the opposite polarity on the opposite side thereof. 9th. The combination of a ring-armature consisting of a succession of oppositely wound coils arranged in a circle with their axes parallel to the axis of rotation, with a field magnet consisting of a core extending through the open centre of the armature, and radial pole pieces at opposite ends of said core extending to equidistant points around the circumference of the armature, with the poles of contrary polarities arranged in pairs opposite to each other and on opposite sides of the armature. 10th. The combination of a ring-armature consisting of a succession of oppositely wound coils, arranged in a circle with their axes parallel to the axis of rotation, with a field-magnet extending through the open centre of the armature, and having radial pole pieces extending to equidistant points around the circumference of the armature, with the poles of contrary polarities arranged in pairs opposite to each other, and on opposite sides of the armature, the said pairs of poles being greater or less in number than half the number of coils in the armature, and with a commutator adapted to reverse the current in each coil of the armature whenever any pair of poles reaches a position opposite thereto, and to again reverse the current therein whenever any two successive pairs of poles reach positions equally distant therefrom. 11th. The combination of a ring-armature consisting of a circular series of cores wound with coils and arranged with their axes parallel to the axis of rotation, and two iron rings fastened against opposite

ends of said cores with a field-magnet extending through the open centre of the armature, and having pairs of poles of contrary polarity disposed oppositely to one another on opposite sides of the armature, and closely adjacent to said iron rings, whereby said rings serve to form closed magnetic circuits between the successive cores of the armature, and between the field-magnet poles and the armature cores. 12th. A ring-armature consisting of a circular series of cores wound with coils, and arranged with their axes parallel to the axis of rotation, and two iron rings fastened against opposite ends of said cores, whereby said rings serve to form closed magnetic circuits between the successive cores, in combination with a field-magnet having pairs of poles of contrary polarity arranged face to face on opposite sides of the armature and closely adjacent to said iron rings. 13th. The combination to form a ring-armature, of a circular series of cores wound with coils, and arranged with their axes parallel to the axis of rotation, and two iron rings fastened against opposite ends of said cores, and constructed of spiral laminæ having their convolutions insulated from one another, for the prevention of Foucault currents. 14th. The combination to form a ring-armature of a circular series of cores wound with coils, and arranged with their axes parallel to the axis of rotation, two iron rings arranged against the opposite ends of said cores, constructed of insulated spiral laminæ metal plates sunk flush into said rings opposite the respective cores, and screws passed through said plates into the cores to bind them together. 15th. The combination to form a ring-armature of a circular series of cores arranged with their axes parallel to the axis of rotation, two iron rings fastened against opposite ends of said cores, and flat coils wound on said cores and overlapping one another. 16th. The combination of a ring-armature consisting of a circular series of cores wound with coils, and arranged with their axes parallel to the axis of rotation, a field exciting coil wound around the axis of rotation within, and fixed to said armature, and a field-magnet consisting of a central core arranged to revolve within said exciting coil, and radial pole pieces fastened to opposite ends of said core extending beyond said exciting coil at both ends thereof, and terminating in poles closely adjacent to the armature on opposite sides thereof. 17th. The combination of a ring-armature consisting of a circular series of cores wound with coils, and arranged with their axes parallel to the axis of rotation, and two iron rings fastened against opposite ends of said cores, a field exciting coil wound within and fixed to said armature, two fixed bearing frames between which said armature is arranged, and to which it is fixed, an axial shaft having bearings in said frames, and a field-magnet consisting of a central core fixed on said shaft within said exciting coil, and radial pole pieces fastened to opposite ends of said core extending past the ends of said exciting coil between said fixed frames, and terminating in close proximity to the opposite sides of said armature. 18th. The combination of a stationary ring-armature having its coils wound in successively opposite directions, a revolving field-magnet, and a commutator consisting of as many stationary segments as the product of the number of armature coils multiplied by the number of pairs of field poles, connections between such coils and segments, whereby to each coil are connected as many segments equidistantly disposed as the number of pairs of field poles, and the commutator brushes carried by the revolving shaft on which the field-magnet is mounted. 19th. The combination of a stationary ring-armature having its coils wound in successively opposite directions, a revolving field-magnet, and a commutator consisting of as many stationary segments as the product of the number of armature coils multiplied by the number of pairs of field poles with brushes carried by the revolving shaft upon which the field-magnet is mounted, and connections between the armature coils, and commutator segments consisting of a series of washers connected respectively to the respective coils, and each having as many radial arms equidistantly disposed as the number of pairs of field poles, and said arms joined to the respective segments. 20th. In a commutator, the combination, with stationary segments, of a revolving shaft, revolving brushes traversing said segments and carried by said shaft, a hub arranged on said shaft, and to which the arms carrying said brushes are fixed, a key for clamping said hub to said shaft, arranged in a recess in said hub, and movable in radial direction, and a set-screw in said hub arranged longitudinally of said shaft, and having a conical portion engaging said key, whereby on tightening said screw, said key is forced against the shaft thereby securing the hub in place thereon. 21st. In a commutator, the combination, with stationary segments, of a revolving shaft, revolving brushes traversing said segments and carried by said shaft, and connected respectively with the positive and negative brushes, take-off strips in contact with said rings respectively, and an insulated screw arranged to press said strips apart and against the respective contact rings.

No. 30,350. Electro-Motor and Dynamo-Electric Machine. (*Electro-moteur et machine dynamo-électrique.*)

William Main, Brooklyn, N.Y., U.S., 7th December, 1888; 5 years.

Claim.—1st. The combination, with a ring armature of the grammo type, of a field magnet extending through the open centre thereof, from one side to the other, and having its contrary poles disposed adjacent to the armature on opposite sides thereof, and at different points on the circumference, corresponding to the arrangement of poles in the grammo ring. 2nd. The combination, with a ring armature of the grammo type, of a field magnet extending through the open centre thereof, and having its contrary poles disposed adjacent to the armature on opposite sides thereof, and arranged in alternation, each pole being disposed midway of two poles of the contrary polarity. 3rd. The combination, with a ring armature of the grammo type, of a field magnet, having its middle portion or core extending through the open centre of the armature, in a direction substantially parallel with the axis of rotation, and having pole-pieces extending from the ends of the core radially, and terminating adjacent to the armature on opposite sides thereof, the poles of one polarity being disposed on one side of the armature, and those of the contrary polarity being arranged in alternation therewith and on the opposite side of the armature. 4th. The combination, with a ring armature of the grammo type, of a field magnet, having its

middle portion or core extending through the centre of the armature in a direction substantially parallel with the axis of rotation, and having its contrary poles disposed adjacent to the armature on opposite sides thereof, and arranged in alternation, each pole being disposed midway of two poles of the contrary polarity, and an exciting coil for said field magnet, arranged within the armature and enclosing said core. 5th. The combination, with a non-rotative ring armature of the grammo type, of a relatively mounted field magnet extending through the open centre of the armature, and having its contrary poles disposed adjacent to the armature on opposite sides thereof, and arranged in alternation, each pole being disposed midway of two poles of the contrary polarity. 6th. The combination with a non-rotative ring-armature of the grammo type, of a non-rotative field magnet coil fixed within said armature with its axis coincident with the axis of rotation, and a relatively-mounted field magnet extending through the centre of the armature and field magnet coil, and having radial pole-pieces extending past the ends of the field magnet coil, and terminating adjacent to the armature on opposite sides thereof, the contrary poles being arranged in alternation. 7th. The combination, with a ring armature of the grammo type, of a field magnet extending through the open centre thereof, and having its contrary poles disposed adjacent to the opposite sides of the armature and arranged in alternation, said magnet being constructed of a central axial core, and end pieces forming the poles fastened removably to the opposite ends of said core. 8th. The combination, with a ring armature of the grammo type, of a field-magnet, consisting of a cylindrical core *A*, two opposite end pieces *B*, fastened removably to the ends thereof, and forming radial pole pieces and polar blocks *p, p*, fastened to said end pieces. 9th. The combination, with a ring armature of the grammo type of a field magnet, having its contrary poles disposed adjacent to the armature on opposite sides thereof, and arranged in alternation, whereby the lines of force proceeding from one pole to the next pole of opposite polarity enter the armature core at one side, and pass out at the side opposite to that by which they enter. 10th. A ring armature of the grammo type, constructed with an iron core wound with radial coils, and having core projections in the angular spaces between the coils, said core projections constructed with a recessed middle portion, and presenting each two walls or edges, one in advance of the other at the sides of the armature. 11th. A ring armature of the grammo type, constructed with an iron core, wound with radial coils, and with iron core projections in the annular spaces between the coils, said core projections projecting laterally to the opposite sides of the armature, in the form of walls perpendicular to the plane of the side of the core, and the two walls in each angular space, separated from one another, thereby forming an angular recess between them. 12th. A ring armature, of the grammo type, constructed with an iron core wound with radial coils, and with core projections in the angular spaces between the coils, said core projections, constructed each of two pieces of angle-iron, with their bases tapered angularly, and superposed against the sides of the core and their perpendicular projecting walls converging. 13th. A stationary ring armature of the grammo type, in combination with a field magnet revolving with its poles on opposite sides thereof, and with two fixed frames on opposite sides of the armature and exterior to the revolving field magnet, and connections for uniting said armature to said frames, consisting of cross-bars extending between the frames and crossing the periphery of the armature core perpendicularly thereto, and angular plates fitted against opposite sides of the core between the armature coils, to which plates said cross-bars are fastened. 14th. A ring armature of the grammo type, in combination with a revolving field magnet, with the fixed frame of the machine to which the armature is rigidly connected with a stationary field magnet coil within the armature, and with connections for fastening said coil to the armature, consisting of rings fitting over the field magnet coil, and against opposite sides of the armature and screws for fastening said rings together. 15th. A ring armature of the grammo type, wound with radial coils, and having angular core projections on its opposite sides in the angular spaces between the coils, in combination with a field magnet, having its contrary poles disposed in alternation against the opposite sides of the armature, and constructed with pole pieces, the forward and rear edges of which are flared outwardly to a degree greater than that of the radii from the armature centre, whereby the pole pieces advance, the concentrated lines of force passing between them and the core projections shift radially along the advancing edges of the pole pieces. 16th. In an electro-motor, the combination of a toothed sector with a controlling lever, a latch pivoted thereto, and a target screw mounted in said latch, adapted to engage the teeth of said sector, when the latch is pressed down, and to be raised clear therefrom when the latch is retracted. 17th. In an electro-motor, the combination of a toothed sector, a controlling lever, a latch pivoted to said lever, and a differential screw mounted in said latch, the coarser thread thereof adapted to engage the teeth of said sector when the latch is pressed down and the finer thread thereof engaging the said latch.

No. 30,351. Fastening for Gates.

(*Fermeture de barrière.*)

Burton B. Coffey, St. Joseph, Mo., U.S., 10th December, 1888; 5 years.

Claim.—In a gate fastening, the combination of the slotted housing secured to the gate, a bent lever pivoted to said housing, with its short arm extending therein and provided with a catch on the outer end, a staple on the post of the gate, and in position to connect with said catch, hand-lever *h* pivoted to the gate connecting-rod *c* extending into the housing in position to engage the short arm of the lever on one side, but not attached thereto, and a spring in position to press against the short arm on the opposite side, substantially as and for the purposes described.

No. 30,352. Cultivator. (*Cultivateur.*)

Samuel B. Cunningham, Inka, Ark., U.S., 10th December, 1888. 5 years.

Claim.—1st. The combination, with a plough beam, of a frame consisting of side parts, of hangers supporting an axle carrying a

fender wheel, and slotted cross-bars vertically adjustable in the side parts and adjustably clamped to the plough beam, substantially as described. 2nd. A fender wheel for cultivators, consisting of a wheel having an interior wheel with spokes adjustable, substantially as described, upon the axes of the outer wheel, whereby the spokes of the inner wheel may move over, and regulate the spaces between the spokes of the outer wheel, substantially as described. 3rd. The combination, with the plough-beam 1, of the frame 14, having perforations 17, the support wheel 12, slotted cross-bars 15 having nuts 16, the bolts 18, having nuts 20, and a plough adjustably secured to the plough beam, substantially as described.

No. 30,353. Lamp. (*Lampe.*)

Edward Toopy, Lowell, Mass., U. S., 10th December, 1888; 6 years.

Claim.—1st. In an insulator of the character described, the members *m* and *f*, composed of wood, machine, rubber, or similar non-conducting material, the member *m* being provided with a screw-threaded socket-piece, as *p*, for connecting it with a burner and the member *f*, with a screw-threaded nipple, as *d*, for connecting it with the body of a lamp, said members being hinged together and provided with a catch for keeping them closed, substantially as described. 2nd. In an insulator of the character described, the members *m* and *f*, provided with the lugs *t*, catch *v* and packing *z*, the member *m* having a screw-threaded socket piece, as *p*, for connecting it with a burner, and the member *f*, with a screw-threaded nipple, as *d*, for connecting it with the body of a lamp, substantially as set forth. 3rd. In an insulator of the character described, the member *f* provided with the holes *r*, and the member *m* provided with the dowels *l*, adapted to enter said holes, said members being hinged together at *t*, and provided with a catch *v* and packing *z*, and also with means *f* respectively connecting them with the body and burner of a lamp, substantially as described.

No. 30,354. Refrigerator Car.

(*Char frigorifique.*)

Nicholas Busmann, Lako, Ill., U. S., 10th December, 1888; 5 years.

Claim.—1st. The combination in a car, of a series of ice-pipes in its interior at each end thereof, extending across the car, connected at their lower ends by detachable close joints, with reservoirs for the water resulting from the melting of the ice, and the cross-plates *G* supported upon the body and frame of the car, and provided with a series of double flanges *f* and *f'*, one of which fits down over the outside of the ice pipes, and the other down within the inside of the pipes, thus forming close and detachable joints with the said pipes, substantially as described. 2nd. The combination in a car, of a series of ice pipes *F* extending across the same at each end in the interior, the cross plates *G*, the ends of which are supported by the side walls of the car, and the series of bars *J*, which are furnished with support by the car, and which sustain plates *G* against sagging at points between the side walls of the car, the said plates being provided with double flanges *f* and *f'* extending down from suitable openings in the same, adapted by size, form and position to embrace the upper ends of the pipes and form closed and detachable joints with the same, substantially as described. 3rd. The combination of the series of ice pipes *F*, provided at the lower ends with cups *b*, the upper ends of which are permanently and securely fastened thereto by close joints, and so much larger than the pipes as to leave angular spaces between the rings and pipes, large enough to receive therein the cups *b*, which project upward from the reservoirs *E* and the said reservoirs *E*, with a series of vertical cups *b* projecting upward therefrom, corresponding in form and position, with and below said ice pipes, but so much larger in diameter than said pipes as to receive the lower ends thereof within them, and also provided with tubes *h* encircling them, but so much larger than the cups as to leave angular spaces between the cups and tubes for the ring *b*, said tubes *h*, having their lower edges fastened permanently to and making close joints with said cups, the whole adapted to form close and detachable connections between the pipes *F* and reservoirs *E*, by means of mere friction of smooth surfaces and partially elastic parts, substantially as described. 4th. In combination with a series of ice pipes *F*, the supports *i* having bases *i* into which they are screwed, and perforated caps *n* standing upon said bases and extending up into the lower ends of pipes *F*, adapted to support in part the weight of the columns of ice in the pipes and receive the water from them, substantially as described. 5th. The combination of the air pipes *v*, having the lower ends in communication with their respective reservoirs, and their upper ends to extend about five-sixths of the way up to the roof of the car, with perforated pipe *o*, which extends from one of the pipes *v* to the other, and opens into both of them, adapted to conduct the water from condensed vapor into the reservoirs, substantially as described. 6th. The described reservoirs *E*, having flat bottoms and arched tops, which are provided with a series of cup-like projections *b*, corresponding in form and position with the described series of ice-pipes, and which are also provided with supports *i*, the bases *i* of which are securely fastened to their bottoms, while the upper ends and caps *n* of the supports extend up through the cups *b*, the whole adapted to receive the water from the ice-pipes and to sustain the columns of ice in the same, substantially as described. 7th. In combination, with the described reservoirs, the waste-pan *R*, having side and end flanges, and having its bottom elevated about midway of its length and the ends thereof depressed, and having the channels *t* leading to holes *z*, near each end of the bottom adapted to conduct off the water from the reservoirs, substantially as described. 8th. In a refrigerator car, a refrigerating apparatus, consisting of refrigerating chambers at each end, formed in part by division doors extending across the car, a series of cooling pipes in said chambers, reservoirs below and communicating with each series of cooling pipes, air-tubes extending upward from each reservoir, and an upwardly-inclined perforated pipe communicating with said air tubes for conveying cold air through the body of the car, and carrying off the water of condensation, substantially as described.

No. 30,355. Life Preserver.

(*Appareil de sauvetage.*)

Samuel P. Amberton, Alpena, Mich., U. S., 10th December, 1888; 5 years.

Claim.—1st. A life-preserver consisting of two hollow bolts connected together at one side by a tube, and at the opposite side by a bellows, the said bellows communicating with one of the said bolts, and forcing air through bot. of two bolts, substantially as described. 2nd. A life-preserver consisting of two hollow bolts, the upper one of which is provided with hollow shoulder straps communicating therewith, a tube connecting the bolts at one side, and a bellows connecting them at the opposite side, the said bellows being in communication with one of the bolts, and forcing air throughout both bolts and shoulder straps, substantially as described. 3rd. A life-preserver consisting of an inflatable harness formed of the belt 1, pipe 2 connecting the same, bellows 3 secured at its ends to belts 1, and having loop 13, pivoted bar 12 having head 14, and extending over receiving air-vault 15 of the bellows, and nozzle 4 extending through one of the bolts 1, and having opening 8 and thumb-screw 10, with head 11 located above valve 9, substantially as described. 4th. In a life-preserver, the combination, with two belts connected together by a tube at one side, of a bellows connected to each belt, and having a nozzle extending through and communicating with one of the said belts, a discharge valve in said nozzle, and a thumb-screw in the end of the nozzle for locking the discharge valve when the bolts have been inflated by the bellows, substantially as described.

No. 30,356. Weight Scale. (*Balance.*)

August H. Deiko, Guelph, Ont., 10th December, 1888; 5 years.

Claim.—1st. A weight scale consisting of a rolling trunnion carried on a stationary straight track, and having curved wings extending from opposite sides of it, the outer circumference of each wing being equal in diameter and shaped on a true circle which joins the circle of the trunnion, the weight being suspended from the trunnion by a flexible cord, or its equivalent, passing over one of the curved wings, and the weighing tray similarly suspended from the trunnion by a flexible cord, or its equivalent, carried over the other curved wing, an index finger connected to the centre of the trunnion and operating in conjunction with a properly-marked index-plate, substantially as and for the purpose specified. 2nd. A weighing scale consisting of a rolling trunnion carried on a stationary straight track, and held thereon by cords, or other flexible material, wrapped round each end of the trunnion, each end of the said cords being connected to a winding key situated at each end of the track, the said rolling trunnion having curved wings extending from opposite sides of it, the outer circumference of each wing being equal in diameter and shaped on a true circle which joins the circle of the trunnion, the weight being suspended from the trunnion by a flexible cord, or its equivalent, passing over one of the curved wings, and the weighing tray similarly suspended from the trunnion by a flexible cord, or its equivalent, carried over the other curved wing, an index finger connected to the centre of the trunnion, and operating in conjunction with a properly-marked index-plate, substantially as and for the purpose specified.

No. 30,357. Gib and Key.

(*Clavette et contre-clavette.*)

Thomas Young, Bradford, Penn., U. S., 10th December, 1888; 5 years.

Claim.—1st. The combination of the gib *F* having perforated projections *f, f* at one end thereof, and a recess in the gib adjacent said projections, and a spring in said recess, a pin passing through said spring and gib, as *w*, provided with a flat point *k* projecting laterally, and a wedge key having a screw-threaded stem, and upon said stem a nut having longitudinal grooves, said nut being located between the perforated projections of the gib, substantially as and for the purpose described. 2nd. The combination of the gib *F* having the perforated projections *f, f* at one end thereof, a scale of divisions adjacent said projections, and a recess between them, and within said recess a nut having longitudinal grooves, and a pin inserted in one of said grooves, substantially as and for the purpose described.

No. 30,358. Propeller. (*Propulseur.*)

Gideon S. Adams, Camden, N. J., U. S., 10th December, 1888; 5 years.

Claim.—1st. The combination of the frame, the series of shafts *I* connected together by rods, and provided with crank pedals, the sprocket wheel *H* secured to one of the shafts, the shaft *D* vertically movable in the frame, the paddle wheels mounted on the shaft *D*, and the sprocket wheel *G* secured to said shaft *D*, and connected to the other sprocket wheel *H* by a chain, substantially as described. 2nd. The combination of the frame, the two shafts *I* connected together by rods and provided with crank pedals, the sprocket wheel secured to the rear end of said shafts, the shaft *D* vertically movable in the frame, the paddle wheel, and the sprocket wheel *G* vertically movable with the shaft *D*, and connected to the sprocket wheel *H* by a chain, substantially as and for the purpose specified. 3rd. The combination of the frame, the sprocket wheel *H* mounted in the frame, and the brake secured to the frame and adapted to engage said sprocket wheel, substantially as described. 4th. The combination of the frame, the rod *M* provided at the top with a cross-piece, and at the bottom with an outward extending arm, the vertically adjustable handle *M* suitably connected with said cross-piece, the connecting ropes or chains *N*, the tiller having one end attached to the rope or chain *N*, and the other provided with a longitudinal slot, the rudders, and a cross-piece connecting the rudders, and provided with a pin to engage in the longitudinal slot of the tiller, substantially as described. 5th. The combination of the frame, the rod *M* provided at the top with a cross-piece, and at the bottom with an outward extending arm, the handle *M* parallel with the cross-piece, and suitably connected thereto, the tiller, and the rope or chain *N* connecting the tiller to the outward extending arm, substantially as described. 6th. The adjustable paddle box consisting of the metal

franco-work, and the fabric covering and provided with a cap capable of being removed to provide an opening in the top of the paddi box, substantially as described.

No. 30,359. Reed Organ. (*Orgue*)

Hiram G. Chute, Yarmouth, N.S., 10th December, 1888; 5 years.

Claim—1st. The lever board I with the flange K working under, and in combination with the foot pedals H on the pin, and joint P, the rod J, the lever E turning on the pin F, and connected with the front board C by the pin, and joint G by which the front board C is drawn back over the roller R by pressure on the foot pedals H, substantially as and for the purpose herebefore set forth. 2nd. In combination, with the lever board I, and the pin and joint P, the foot pedals hinged to the lower end of the lever board I, the flange K meeting the flange K k when the front board is drawn out by the hand, thereby closing the opening in which the foot pedals play, substantially as and for the purpose herebefore set forth.

No. 30,360. Twine Oiler for Self-Binding Reapers. (*Graisneur de ficelle pour moissonneuse-lieuse.*)

Donald McCoug, Mill, Ont., 10th December, 1888; 5 years.

Claim—1st. The combination, with the cover B, of the curved walls E, flanges E, and strip, E, and the main casing A formed with the depression k, substantially as described. 2nd. The cover B having the chamber B, wall C, curved walls E, flanges E, and tension lever C, in combination with the pulley F, curved seats G, and concaved blocks et, substantially as described.

No. 30,361. Show Case holder for Exhibiting Leather Laces for Boots and Shoes. (*Montre pour cordons le cuir le chaussures.*)

James Paton, Johnstone Mill, Scotland, 10th December, 1888; 5 years.

Claim—The show case or holder for exhibiting leather laces for boots and shoes herein shown and described, comprising projecting out sides a, in combination, with a closed in back, with open front, black plate A to which the laces B are hung in pairs, or small parcels to exhibit them, substantially as set forth.

No. 30,362. Apparatus for Supplying Steam or Fluid to the Cups of Telescopic Gas Holders. (*Appareil pour alimenter le vapeur ou de fluide les godets des gasomètres télescopiques.*)

Samuel Cutler, Millwall, Eng., 10th December, 1888; 5 years.

Claim—The pipe A, tube B, pulleys C and F, pipe D, pipe E, cocks or valves H, and counterpoise weights G, together with the intervening cocks or valves, combined and arranged for the purpose herebefore set forth, and as herein described and shown on the drawings.

No. 30,363. Steam Generator. (*Générateur de vapeur*)

George P. Erhard, El Mora, N.J., U.S., 10th December, 1888; 5 years.

Claim—1st. The improved steam generator herein described, combining with a boiler A having a series of fire chambers formed therein, connecting with a combustion chamber at the rear thereof, of generating pipes b, b in said fire chamber, stand-pipes which extend upward through the combustion chamber and enter the boiler through the vertical partition a, which separates the water chamber from the combustion chamber, substantially as set forth. 2nd. The improved steam generator, combining therein a boiler having a fire and combustion chambers arranged as described, pipes b in said fire-chambers, and stand-pipes f and suitable feed-pipes, arranged and operating substantially as described. 3rd. The improved steam generator, having the several generating pipes connected with the boiler and with one another in the peculiar manner described, substantially as and for the purposes set forth. 4th. In combination with a boiler having therein fire-chambers a, a combustion chamber and a water chamber partitioned off, substantially as described, of generating pipes arranged in said fire chamber, and extending into the combustion chambers, valved supply pipes connecting said generating pipes with the water chamber of the boiler, and stand-pipes extending upward through the combustion chamber, and having a forward extension provided at its extremity within the boiler with an automatic valve, substantially as set forth. 5th. The combination, with the body of a boiler having a fire-chamber, and a combustion chamber such as described, of generating pipes arranged within the fire-chamber, and a common stand-pipe, and a supply pipe, all arranged and operating substantially as set forth.

No. 30,364. Roof and Fire-Escape Ladder. (*Echelle de toiture et de sauvetage.*)

Henry Carss, Delta, Ont., 10th December, 1888; 5 years.

Claim—A ladder composed of sections of pipe A connected by lengths of wire rope B, threaded through the tube of the sections A, and the ends of each length of wire rope fastened together by a sleeve C or other device, and the pipe sections secured to the wire lengths at parallel distances by plugs D provided with a leg F, and foot F, as set forth.

No. 30,365. Thill Coupling. (*Arçon de limonière.*)

Fred. S. Blackman, G. L. Blackman, Florence M. Blackman and W. C. Heggie, Port Allegany, Penn., U.S., 11th December, 1888; 5 years.

Claim—A thill coupling and anti-rattler consisting of box A provided with a hinged top a, a catch E, a shaft iron D having head d, and a clip B, substantially as set forth.

No. 30,366. System of Electrical Distribution. (*Système de distribution électrique.*)

The Thomson-Houston International Electric Company, Boston, (as signed of Edwin W. Rice, Jr., Lynn,) Mass., U.S., 11th December, 1888; 5 years.

Claim—1st. In a system of electrical distribution, the combination, with the mains traversing the district to be supplied, of the feeder circuits connected to said mains at different points, and each carrying an alternating or reversed current, and adjustable counter-electromotive force generators placed in said feeder-circuits between the supply mains, and the source of alternating current, as and for the purpose described. 2nd. The combination in an electrical distribution system, of mains traversing the district to be supplied, and supplying currents in multiple arc, a generator or source of alternating currents connected with said system of mains, feeder-wires connected to said mains at different points, as described, and adjustable counter electromotive force generators in the respective feeder-wires, as and for the purpose described. 3rd. The combination, with an alternating current circuit, of an adjustable counter electromotive generator, and a controlling or adjusting device thereof responsive to the variations in the alternating current on the circuit, as and for the purpose described. 4th. The combination, with means supplying one or more transforming devices with alternating or reversed currents, of an adjustable counter-electromotive force generator in the circuit over which the alternating currents are fed to said mains, and a controlling device for governing the adjustment of said counter electromotive force generator, said controlling device being connected to the mains, as described, so as to be responsive to changes in the potential on said mains. 5th. The combination in a system of electrical distribution, of a set of mains supplying induction coils in multiple arc, feeder circuits carrying alternating or reverse currents, adjustable counter-electromotive force generators in said feeder circuits, and controlling devices for said generators responsive to changes in the potential of the mains, as and for the purpose described. 6th. The combination, with a wire or conductor carrying an alternating current, of an adjustable counter-electromotive force generator placed in the circuit of said wire or conductor and a controlling device thereof consisting essentially of a conductor of low resistance and high self-induction in which currents are induced by the alternations of current on the circuit, as and for the purpose described. 7th. The combination in a system of electrical distribution of mains traversing the districts to be supplied, feeder-wires connected with said mains at various points, and carrying alternating currents, adjustable counter-electromotive force generators in said feeder-wires, and controlling devices for said generators responsive to the changes of potential on the mains, and connected to said mains at or near the points where the feeder-wires are joined to the same.

No. 30,367. Electric Motor. (*Moteur électrique*)

The Thomson-Houston International Electric Company, Boston, (as signed of Edwin Thomson, Lynn,) Mass., U.S., 11th December, 1888; 5 years.

Claim—1st. The combination, with an electric motor, of a device acting on a field-magnet with a tendency opposing the main or field magnetism, and with a power dependent upon the speed of the motor as determined by the load to gradually and directly vary the magnetic field in which the armature revolves, as and for the purpose described. 2nd. In an electric motor, a field-magnet having two sets of coils, one a charging set, and the other a demagnetizing or opposing set having a constant, or approximately constant, effect while the motor is running at any given speed. 3rd. In an electric motor a field-magnet having two sets of coils, one of which is a demagnetizing set in a derived circuit around the motor-armature, and has a constant, or approximately constant, effect while the motor is running at any given speed. 4th. In an electric motor, the combination with the main or energizing field-magnet coils, of a set of coils opposing the influence of the energizing coil, and arranged in multiple arc circuit with the armature, and an adjustable artificial resistance controlling the flow of current in said opposing coils. 5th. The combination, with an electric motor, of a demagnetizing coil or helix, a variable artificial resistance controlling the flow of current in said coil, and a centrifugal governor for operating or adjusting said resistance correspondingly with the change of speed in the armature. 6th. The combination, with the field-magnet for an electric motor, of an automatic controlling device actuated by variations in the speed of rotation of the motor under varying loads, to automatically vary the strength of the magnetic field in which the armature revolves independently of the strength of the main circuit current supplied to the motor terminals.

No. 30,368. Machine for Sawing Fence Pickets. (*Machine à scier les pieux de clôture*)

William Miller, (assignee of Samuel D. Riegel), Thomasville, Ga., U.S., 11th December, 1888; 5 years.

Claim—1st. In a machine for sawing pickets, the combination of the saw F, and the saws Z on opposite sides of the saw F, and vertically inclined in opposite directions, and all having their cutting portions intercepting each other in the same longitudinal plane, the saw Z and F being out of line with each other, substantially as described. 2nd. The combination, in a machine for sawing pickets, of the circular saw F, the guide rail L vertically adjustable with relation to the said saw, and having the opening in its centre through which the said saw extends, and the circular saws Z arranged on opposite sides of the said guide rail, and inclined in opposite directions the upper edges of the said saws Z extending over the upper edge of the guide rail, said saws Z being further journalled in bearings which are adjustable toward and from the guide rail, substantially as de-

scribed. 3rd. The combination, in a machine for sawing pickets of the guide rail, a circular saw F¹ having its upper edge extending through a central opening in the guide rail, the flange plate N¹ projecting from the upper edge of the guide rail, and extending longitudinally thereon in rear of, and in line with, the saw F¹, and the inclined circular saws Z arranged on opposite sides of the guide rail, and having their upper edges extending in notches, or recesses, in the upper edge of the flange plate, substantially as described. 4th. The combination in a machine for sawing pickets, of the circular saw F¹, the flange plate N arranged longitudinally in line with the said saw in rear thereof, the oppositely inclined circular saws Z on opposite sides of the saw F¹, and out of line therewith and with each other, and the guides O in rear of the saws Z, substantially as described. 5th. The combination, in a machine for sawing pickets, of the guide rail L, the circular saw F¹ having its upper edge extending through an opening in the said guide rail, the bars T having the transverse slots U at their ends, the inclined bars B on which the ends of the said bars T are supported, the clamping belts extending through the slots U, and securing the bars T to the bars B at any desired lateral adjustment toward or from the guide rail, and the oppositely inclined circular saws Z having their arbors journaled in bearings on the bars T, substantially as described. 6th. The combination, in a machine for sawing pickets, of the guide rail E, a circular saw F¹ having its upper edge extending through a central opening in the guide rail, and projecting above the same, the inclined circular saws Z on opposite sides of the guide rail, and the guide board P¹ arranged on one side of the guide rail, substantially as described. 7th. In a machine for sawing pickets, the combination, of the saw F¹ for cutting the longitudinal kerf in the board with the vertically inclined saws Z, arranged on opposite sides and in rear of the saw F¹, said saws Z cutting inclined kerfs in the board, the cutting portions of the saws F¹, Z intersecting each other in the same longitudinal plane, substantially as described.

No. 30,369. Combined Hat Conformator and Stretcher. (*Bloc de chappellerie.*)

Hugh Lyons and Charles Brass, Lansing, Mich., U.S., 11th December, 1888; 5 years.

Claim.—1st. In a head conformator, the combination, with the ring of conforming slides radially adjustably secured thereto, and provided with head conformers, and hat conformers, substantially as described. 2nd. In a hat conformator, the combination, with the ring, of the conformator slides provided with the shanks engaging into radial slots in the ring of the hat conformator, and head conformers formed therein, of springs interposed between the slides and the ring, and the clamp screws substantially as described. 3rd. In a hat conformator, the combination, of the ring, the conformator or slides, and the spoon-shaped hat conformers pivotally secured to the upper end thereof. 4th. In a hat conformator, the combination, of the ring A, the slides B, the shanks a engaging in radial slots in the ring, the spring D, the head conformators C pivotally secured upon the slides, and the curved ends d, the parts being arranged to operate, substantially as described. 5th. The combination, in a hat conformator, of the conformator devices, and the table E, a hood or chamber G, the latter being arranged to form a heating chamber and to operate as and for the purpose described.

No. 30,370. Machine for Sharpening Slate Pencils. (*Machine à tailler les crayons d'ardoise.*)

Robert D. Richardson, (assignee of Donald Codd), Winnipeg, Man., 11th December, 1888; 5 years.

Claim.—1st. A pencil sharpener, the cutting edges of which consist of several series of saw, the line of which teeth converge substantially as described. 2nd. A pencil sharpener which has in combination the frame, and the saw blades set in the frame, the lines of the teeth of which saw blades converge substantially as described. 3rd. A pencil sharpener and eraser which has in combination, the frame, and eraser attached to the frame, and the saw blades set in the frame, substantially as described.

No. 30,371. Wrench. (*Cle à écrou.*)

Bradford F. Lancaster and Richard W. Black, Augusta, Me., U.S., 11th December, 1888; 5 years.

Claim.—In a wrench, a sliding jaw made in two parts, the one having an elliptically-shaped end, and the other an elliptically-shaped hole, and a projecting lug, all secured together by heading said rivet, the lug of the one part coming against the face of the other part, whereby the two parts are locked and interlocked together, substantially in the manner and for the purpose set forth.

No. 30,372. Photolithography, Photo-engraving and other Photo-illustrative Processes. (*Procédé de photolithographie, photo-gravure, photo-illustration et autres.*)

The Phillip-Stephan Photo-litho and Typographic Company, (assignee of Samuel Phillips and Adam Stephan), Sydney, N.S.W., 11th December, 1888; 5 years.

Claim.—1st. The use of a semi-protective material for covering a sensitized transfer medium before exposure under the negative, substantially as herein described and explained. 2nd. A grained transfer medium, consisting of a sensitized gelatine surface covered with a semi-protective material, such as thick lithographic ink, substantially as herein described and explained. 3rd. The particular process and operations for producing a grained sensitized transfer medium, and for producing an etching, engraving, etc. therefrom, substantially as herein described and explained. 4th. The use of a number of transfers printed of different depths for obtaining a number of color stones in photo-chromis lithographic printing, substantially as herein described and explained.

No. 30,373. Harness Terret. (*Crochet de selle.*)

Simon J. Wessly, Lebanon, Penn., U.S., 12th December, 1888; 5 years.

Claim.—1st. A terret with an elastic clamp portion formed integral therewith, and adapted to hold a strap between said clamp, and the periphery of the main portion of the terret, substantially as described. 2nd. A terret having its front wall provided with a tongue of approximately a V shape, and having a spring clamp integral with the main portion thereof, substantially as and for the purpose set forth.

No. 30,374. Apparatus for Storing and Measuring Dry Goods, etc. (*Appareil pour emmagasiner et mesurer les draps.*)

William Dærlinger, LaCrosse, Wis., U.S., 12th December, 1888; 5 years.

Claim.—1st. The combination of the revoluble reel, and the tubular pendant holders pivotally suspended therefrom, and thereby prevented from rotating axially when the reel is turned, and having the longitudinal slits, substantially as described. 2nd. The combination, of the revoluble reel, and the tubular holders suspended eccentrically therefrom, and having the open ends and the longitudinal slits, substantially as described. 3rd. The combination, of the standards, the reel journaled thereon, the holders suspended eccentrically from the outer ends of the reel arms, and the measuring board L having the arms M pivoted to the standard, substantially as described. 4th. The combination, of the standards having the stops I, K on opposite sides of the axis of the reel, the reel journaled in the standards, the holders suspended from the outer ends of the reel arms, and the measuring board, or table, having the arms pivoted to the standards on the axis of the reel, and adapted to be supported in a vertical or horizontal position by the stops S, K, substantially as described. 5th. The combination, with the standards, and the reel journaled therein, and having the eccentrically suspended holders, of the measuring table or board supported on one side of the reel, the ruler O arranged transversely over the same, and having the arms P arranged and guided in openings in the board, or table, and the spring R secured to the board, or table, and bearing against the arms P to normally elevate the ruler, substantially as described. 6th. In combination, with the revoluble reel, the tubular holders pivotally suspended therefrom, and arranged eccentrically, and having the longitudinal slits, and the measuring board arranged on one side of the reel, and adapted to receive the goods from the holders.

No. 30,375. Cracker Box. (*Boîte à biscuits.*)

Stephen E. Parrish, Ithaca, Mich., U.S., 12th December, 1888; 5 years.

Claim.—1st. The combination in a cracker box, with an upper box, or receptacle, of a lower box, or receptacle, provided with the central opening C, the endless carrier D mounted below said opening upon rollers, the casing G enclosing said carrier, and provided with a throat H, and spout J, and the handle I on the front roller, and the drawer N in the bottom of the box, all combined to operate, substantially as described. 2nd. The combination, with an upper box, or barrel, of a lower box A provided with the opening C, the rim P around said opening, the hooks Q, or equivalent fastenings, the endless carrier D mounted upon rollers E and F within the lower box, the casing G in which the carrier is mounted, and provided with a throat H, and spout J, the crank I on the roller E, the roller H in the bottom of the box, the hinged lid K, the parts being arranged to operate, substantially as described.

No. 30,376. Lifting Machine. (*Machine à soulever.*)

James Rice, Windsor, Ont., 12th December, 1888; 5 years.

Claim.—1st. In a lifting machine, the combination, of a tipping spring supported platform, of spring bars extending beyond the slides of said platform, and of a handle connected to the ends of said spring bars for the purpose of pulling against the tension of said spring bars, substantially as described. 2nd. In a lifting machine, the combination, of the platform A, the springs C, D, the block E interposed between said springs, the cross bars F, and the spring bars G extending on each side beyond the sides of the platform, substantially as described.

No. 30,377. Sofa Bed. (*Sofa-lit.*)

George H. Skinner, Guelph, Ont., 12th December, 1888; 5 years.

Claim.—1st. The combination, with two rectangular hinged frames, provided with vertical apertures in the upper face of the end pieces, and diagonal apertures in the outer face of said end pieces, of arms consisting of a solid body, and rods secured in said body projecting from the bottom edge, all combined for operation, substantially as shown and described. 2nd. The combination, with two rectangular hinged frames, provided with vertical apertures in the upper face of the end pieces, and apertures in the side of said end pieces inclined inwardly and downwardly, of arms consisting of a solid body, and rods secured in said body projecting from the bottom edge, and means, substantially as shown and described, for locking one frame to the arms, as and for the purpose specified. 3rd. The combination, with a rectangular bottom and back frame hinged at their contiguous ends, provided with vertical apertures in the upper face of the end pieces, and apertures in the side of said end pieces, inclined inwardly and downwardly, of detachable arms consisting of a solid body, and rods secured in said body projecting from the bottom edge, fixed legs supporting the bottom frame, auxiliary legs hinged to the rear set of fixed legs, and stops secured to the bottom frame, limiting the forward movement of the auxiliary legs, substantially as shown and described. 4th. The combination, with a rectangular bottom and back frame hinged at their contiguous ends, provided with vertical

apertures in the upper face of the end pieces, and apertures in the outer side of said end pieces inclined inwardly and downwardly, of detachable arms consisting of a solid body, and rods secured to said body projecting from the bottom edge, fixed legs supporting the bottom frame, auxiliary legs hinged to the rear set of fixed legs, and limited in their rearward movement thereby, stops secured to the bottom frame limiting the inward movement of the forward legs, and a locking device, substantially as shown and described, for securing the back frame to the arms, as and for the purpose specified.

No. 30,378. Journal Bearing.

(*Coussinet de tourillon.*)

John W. Garratt, St. Louis, Mo., U.S., 12th December, 1883; 5 years.

Claim.—1st. In a journal box, the combination, with the outer shell A of an inner shell B, of brass fitted to the curved under surface of the outer shell, and having under cuts, as described. 2nd. In a journal box, the combination, with the outer shell A of an inner shell B, of brass fitted to the curved under surface of the outer shell, and having under cuts, as described, and a lining of babbitt or other journal box metal moulded in said journal box, and locked thereto between the under cuts of the shell B and the curved under surface of the shell A, as set forth.

No. 30,379. Tobacco Curing Apparatus.

(*Appareil à préparer le tabac.*)

Edwin R. Bardeau, Aiken, S.C., U.S., 12th December, 1883; 5 years.

Claim.—1st. In a curing or drying apparatus, the combination, with a house and a jacketed furnace, of a smoke pipe leading from the furnace to, and ranging in the house and connected to the chimney of the said house, a perforated pipe leading from the jacket of the furnace and extending into the house and surrounding the smoke-pipe, and perforated pipes projecting laterally from said perforated pipe and surrounding the smoke pipe, substantially as herein shown and described. 2nd. In a curing and drying apparatus, the combination, with a house, a jacketed furnace and a generator on the furnace and within the jacket of the same, of a smoke pipe leading from the furnace to and ranging in the house, and connected to the chimney of the said house, a perforated pipe leading from the jacket of the furnace to and within the house and surrounding the smoke pipe, and a pipe leading from the steam generator and projecting into the perforated pipe, substantially as herein shown and described. 3rd. In a curing and drying apparatus, the combination, with a house and a jacketed furnace, of a smoke pipe leading into and ranging in the house, a perforated pipe leading from the jacket of the furnace to and within the house and surrounding the smoke pipe, a vertical pipe connected to the perforated pipe and provided with openings near the top and bottom, and dampers for closing said openings, substantially as herein shown and described.

No. 30,380. Composition of Matter to be used as Liquid Food. (*Composition de matières pour servir d'aliment liquide.*)

Henry T. Champney, New York, N.Y., U.S., 12th December, 1883; 5 years.

Claim.—The herein described composition, for use as fluid food, consisting of defibrinated blood, whiskey, glycerine, albumen, boracic acid and chloride of sodium, in the proportions substantially as specified.

No. 30,381. Apparatus for Driving the Spindles in Machinery for Spinning, Doubling and Twisting, etc., Fibrous Materials. (*Appareil pour faire mouvoir les broches des machines à filer doubler, retordre, etc., les matières fibreuses.*)

Charles W. Jones, London, Ont., 12th December, 1883; 5 years.

Claim.—In a machine for spinning, doubling, twisting, etc., of fibrous materials, the combination, with the driving cylinder and spindles, of the endless band B, running continuously towards and backwards between and around the cylinder and a series of spindles, and passing over a guide pulley at each end of the series, and forming a loop *b*, running over a pulley E, a pulley F, taking the loop *b* and journalled in a clevis E' secured to a cord *c*, the cord *c* holding the clevis E' and drawn away from the cylinder, and counterbalanced by a weight E'' and running over a friction E''', and the weight E''' secured to said cord *c*, substantially as set forth.

No. 30,382. Spring Bed. (*Sommier élastique.*)

Otto Flohr, Buffalo, N.Y., U.S., 12th December, 1883; 5 years.

Claim.—A spring bottom for beds or other furniture, consisting of slats of elastic wood cut from the timber, with a camber or upward swell (in contradistinction to being bent after cutting out) and of such thickness throughout that the middle will resist being pressed below the ends by the weight of the occupant of the bed, whereby all sagging of the slats is avoided, combined with supports for the opposite ends of said slats, substantially as set forth.

No. 30,383. Wash Tub Stand and Step Ladder Combined. (*Banc de cuvette et marchepied combinés.*)

Orlando C. Lamberton and James A. Pickard, Montreal, Que., 13th December, 1883; 5 years.

Claim.—A combination step ladder and tub stand, consisting of cap *w*, *v*, bars A, A and N, N, cross-bars B, B and F, F, legs E, E, and bevelled bars O, O, arranged and combined substantially as and for the purpose hereinbefore set forth.

No. 30,384. Steam Cooker. (*Cuisinière à vapeur.*)

George J. C. Whitlow, Meaford, Ont., 13th December, 1883; 5 years.

Claim.—The combination, with steam cookers, of the steam-generating pot A, reservoir B, partitions C, C, supports D, D, tin cylinder E, basin F, tin cylinder G, basin H and inverted cylinder with cup attached I, substantially as and for the purpose hereinbefore set forth.

No. 30,385. Sheaf Carrier. (*Porte-gerbe.*)

John Johnson, East Wananosh, Ont., 13th December, 1883; 5 years.

Claim.—1st. A sheaf carrier lock, consisting of frame E, having chain G attached, levers L, latches A, bolts B, springs C, bridge plate P and trip rope T, all formed and combined substantially as and for the purpose set forth. 2nd. The frame E and slings D, as formed, in combination with a sheaf carrier lock, substantially as and for the purpose hereinbefore set forth.

No. 30,386. Combined School Desk and Seat. (*Pupitre-siège d'école.*)

Seymour W. Peregrino, Grand Rapids, Mich., U. S., 13th December, 1883; 5 years.

Claim.—1st. In a school desk, the combination of ends or standards A, having legs *a*, and supporting rims *a*₁, *a*₂ for back and top, furnished with tapering dovetail shaped lugs *l* on their bearing surface, grooves for the insertion of the book shelf G, lugs *a*₃ for the retention of the sides of the book-shelf, recess, slide and stop *a*₅, *a*₆ and *a*₇, for holding and operating the lid fitted with a stud B₁, carrying a bush B₂, and a stud A₃ carrying a stop engaging in the circular slot in the seat bracket, the stretcher or foot-board C, holding said standards together, the tilting brackets B pivoted to said standards A and having a supporting rim furnished with tapering dovetail shaped lugs *l*, and a circular slot *b*₁ engaged by a stop on the standard, the seat D, back E and top F, all having on their reverse sides recesses *i* corresponding to the lugs *l* and adapted to interlock therewith and thus be removably secured in their respective positions, the shelf G placed in grooves in the standards sides *i*₁ placed upon said shelf and between the lugs *a*₃, the lid G₃ having pintles and placed in a recess *a*₅, substantially as set forth. 2nd. In a school desk, the combination of the standards A, having legs *a* and carrying a pivot B₁, B₂ and a stop A₂, the brackets B pivoted to said standard and having a circular slot engaging the stop A₂ on the standard, said bracket formed with a supporting rim *b* for the seat furnished with a series of dovetail-shaped sectioned and tapering lugs *l*, and the seat D shaped to conform to the supporting rim *b* and having a series of continuous recesses *i* on its reverse, adapted to engage and be retained by the lugs *l*, said seat, when so placed upon the pivoted brackets B adapted to be tilted backward when unoccupied, substantially as set forth. 3rd. In a school desk, the combination, of supporting rims of the standard and seat bracket furnished on their faces with a series of tapering lugs of dovetail-shaped cross-section adapted to engage corresponding recesses in the back, top and seat, and to wedge and interlock with the same, the reverse of the back top and seat, provided with a series of corresponding recesses *i*₁ formed into a continuous groove with undercut sides and adapted to engage the lugs *l* and interlock with the same, substantially as set forth. 4th. In a school desk, the combination of the standards A, provided with back E and top F, the book-shelf G held in grooves in said standards, sides G₁ held between the bevelled or rebated ends of the shelf G and lugs *a*₃, said shelf and sides forming an enclosed book-shelf, substantially as set forth. 5th. In a school desk, the combination of the standards A, having the recess *a*₅ and bearing *a*₆ and lugs *a*₇, and carrying the back E, top F, shelf G and sides G₁ of the lid G₂, having pintles *p*₂ adapted to turn in the recess *a*₅ and slide in the bearing *a*₆, and the ends of the same to be engaged by the lug *a*₇, substantially as set forth. 6th. In a school desk, the combination of the standard A, bracket B pivotally supported on said standard, the stud or bolt B₁ held in said standard by a square neck, the conical soft metal bush B₂, having flange *b*₂ and projection *b*₂ held on said stud by washer and nut and engaging the eye of the bracket, substantially as set forth. 7th. In a school desk, the combination of the standard A, bracket B pivotally supported on said standards, and having a circular slot *b*₁ adapted to be engaged by a cushioned stop, the bolt A₃ held on said standard, the flanged thimbles A₂ mounted upon said stud, and the stop A of elastic material mounted upon said thimbles and adapted to engage in a circular slot in the bracket, substantially as set forth.

No. 30,387. Cone Tube for Yarn Winding Frames. (*Tube en cônes de renvideuse.*)

John S. Mittall and John B. Cullip, St. John, N. B., 13th December, 1883; 5 years.

Claim.—1st. A winding frame cone tube for winding yarn, having an exterior covering of textile material, cloth, or other fabric cemented thereto, substantially as set forth. 2nd. A cone tube for yarn winding frames, consisting of a material having incorporated therewith, an exterior surface of textile material, cloth, or other fibrous material or fabric, substantially as set forth.

No. 30,388. Window Stop and Sash Fastener. (*Arrête-croisée.*)

Robert L. Mott, Oneida (assignee of John Mott, Buffalo), N. Y., U. S., 13th December, 1883; 5 years.

Claim.—1st. The combination of the perforated removable stop, with the perforated base plate secured thereto, and a screw made fast in the casing and projecting through these perforations, and a perforated key plate, provided with a slit, on the sides of which the head of the screw rests, and holds the parts to the window frame, substantially as and for the purpose specified. 2nd. The combination of the removable stop D, having a hole through it F, with the base plate N secured to the stop, the hole P in the plate, coming di-

rectly over the hole F in the stop, and the screw J made fast in the window casing, and projecting through the holes in the stop and base plate, and the slide plate H, having a hole L, through which the head of the screw passes, and having a diagonal slit M, on the sides of which the screw-head rests, when the plate is pushed down and up between the turned edges of the base plate, which has a projection K on the side of one of the turned edges, against which the turned up ends of the slide plate H strike, to prevent its drawing out, all substantially as and for the purpose hereinbefore set forth.

No. 30,389. Heater. (*Calorifère.*)

Emery O. Bicknell and John F. Wood, Boston, Mass., U. S., 13th December, 1888; 5 years.

Claim.—1st. An apparatus for burning liquid fuel, consisting of a hollow body for containing the liquid fuel to be burned, the walls of said body being composed of incombustible material, an inner box of reticulated non-combustible material within said body, a layer of asbestos within said body, and completely surrounding said box on all sides, and a slotted top provided with a regulating damper, substantially as described. 2nd. An apparatus for burning liquid fuel, consisting of a hollow body for containing the liquid fuel to be burned, the walls of said body being composed of incombustible material, an inner box of reticulated non-combustible material within said body, a layer of asbestos within said body, and completely surrounding said box on all sides, and a slotted lid hinged to said box and provided with a regulating damper, substantially as described.

No. 30,390. Lock. (*Serrure.*)

Lew K. Strang, John A. Hickey and Daniel L. Oulton, Haverhill, Mass., U. S., 13th December, 1888; 5 years.

Claim.—1st. In a lock of the character described, the combination of an escutcheon provided with a rearwardly projecting tube adapted to register with the bolt hole in a locking plate secured to the body of the car, an arm secured to said escutcheon and provided with a bolt hole registering with the hole in said tube, a slot in said arm opening into said bolt hole, a slot in the mouth of said tube registering with the slot in said arm, a bolt disposed in said arm and tube, and provided with longitudinal splines on its body, disposed in the same vertical plane and adapted to slide in said spline slot, and a locking bar provided with a hole in one end, and disposed on said bolt between said escutcheon and arm, said bar having a spline slot adapted to register with the slots in said arm and tube, and permit said bolt to be moved therein, substantially as set forth. 2nd. In a lock of the character described, the combination of the escutcheon C provided with the tube *r*, and flange *g* having the spline slot 45, the arm II provided with the bolt hole *m*, and spline slot *p*, the bolt D fitted to slide in said arm and tube, and provided with the head *f*, and splines 15, 25 and 35, and the locking bar E having the bolt hole *t* and spline slot *r*, said bar being disposed on the bolt between said arm and escutcheon, substantially as and for the purpose specified. 3rd. In a lock, the bolt D provided with the splines 15, 25 and 35 arranged in the same vertical plane, in combination with the locking bar E provided with the bolt hole *t*, and spline slot *r*, said bar being disposed on said bolt and adapted to retain it in position in the lock, substantially as set forth. 4th. In a lock, the combination of the escutcheon C provided with the tube *r*, and spline slot 45, the arm II secured to said escutcheon, and having the bolt hole *m*, and spline slot *p* registering with the slot 45, the bolt D disposed in said arm and tube, and having the head *f*, and splines 15, 25 and 35, the locking bar E disposed on the tube between said arm and escutcheon, and provided with the spline slot *r*, and head 55 having the wire hole 65, and the stop 75 provided with a wire hole adapted to register with the hole 65, by means of which said locking bar may be secured to said stop, and prevent the bolt from being slipped in said tube and arm, substantially as specified.

No. 30,391. Apparatus for Compressing Drugs and other Substances. (*Appareil à condenser les drogues et autres substances.*)

Silas M. Burroughs and Henry S. Wellcome, (assignees of James Timlin and Julian J. Pintkowski), London, Eng., 13th December, 1888; 5 years.

Claim.—1st. In an apparatus for compressing drugs and other substances, a main actuating shaft carrying eccentrics, and an eccentrically grooved drum, combined with the pivoted levers for actuating the plungers, and partially rotating the disc, substantially as set forth. 2nd. In an apparatus for compressing drugs and other substances, the arrangement of the top and bottom plungers connected to levers pivoted on practically the same rod, and actuated from the same driving shaft, substantially as described, and illustrated in the accompanying drawings. 3rd. In apparatus for compressing drugs and other substances, a filler consisting of an adjustably mounted vessel containing rotating arms, preferably mounted on separate shafts and adapted to rotate in opposite directions, substantially as set forth.

No. 30,392. Attachment to Wire Beds. (*Disposition aux sommiers élastiques.*)

John Tye, Toronto, Ont., 14th December, 1888; 5 years.

Claim. The combination, with a wire bed, of rigid stretcher fastened to wires of bed, substantially as and for the purpose hereinbefore set forth.

No. 30,393. Sleigh Kneec. (*Genou de traîneau.*)

Luther V. Moulton and John H. Rempis, Grand Rapids, Mich., U. S., 14th December, 1888; 5 years.

Claim.—1st. In a sleigh, in combination, with the beam A, and

runner B, a knee having a concave seat *d*, and a saddle D having flanges *f*, *g*, substantially as described. 2nd. In a sleigh, in combination, with the beam A, and runner B, a knee having a concave seat *d*, a saddle D having flanges *f*, *g*, and a strap F, substantially as described. 3rd. In a sleigh, a beam A, a cap E, a saddle D, a knee C having a concave seat *d*, and a strap F, substantially as described. 4th. In a sleigh knee, in combination with the legs *b*, *b*, having flanges *e*, *e*, the strap F, substantially as described. 5th. In a sleigh, in combination, with a knee having legs *b*, *b*, a concave seat *d*, and flanges *e*, *e*, a beam A having a cap E and a saddle D, and a strap F, substantially as described. 6th. In a sleigh, in combination, with a knee having legs *b*, *b* provided with flanges *e*, *e*, the strap F, and tie-bar H, substantially as described.

No. 30,394. Fence Post. (*Pieux de clôture.*)

James Higgins and John Sullivan, Grand Rapids, Mich., U. S., 14th December, 1888; 5 years.

Claim.—1st. The fence post having a lengthwise rib B provided with open slots for receiving the stretched wires of a fence, said slots being diagonal to the axis of the post, as shown and described. 2nd. The fence post having a lengthwise rib B, provided with a vertical open slot D in its upper portion for receiving the top guard-rail of the fence, as shown and described.

No. 30,395. Process of Purifying Water. (*Procédé d'épuration de l'eau.*)

Warren Webster, Philadelphia, Penn., U. S., 14th December, 1888; 5 years.

Claim.—1st. The improved process of purifying water herein set forth, consisting of first vaporizing the water at a low temperature and a partial vacuum, whereby the impurities are separated therefrom, and second, in condensing the vapors arising from the purifying chamber by means of water passing through the condensing and into the purifying chamber, substantially as described. 2nd. The process of purifying water herein described, consisting in vaporizing the water at a low degree of temperature, and in partial vacuum, by bringing it in contact with heated metallic plates, second, in condensing the vapors arising from said purifying chamber by bringing the same in contact with the water entering the purifying chamber after it has passed through the condensing chamber, substantially as described.

No. 30,396. Shaft Carrier for Harness. (*Dozière de harnais.*)

Valentine W. A. Richards, Minneapolis, Minn., U. S., 14th December, 1888; 5 years.

Claim.—1st. The shaft-carrier comprising the upper section 2 having the open buckle frame formed on its upper end, the cross-bar 1, and tongue 11, and the lower section 3 hinged to said upper section, substantially as described and for the purpose set forth. 2nd. The combination, in a shaft carrier, of the upper section 2 having the projection 13 on its lower end, and the lower hook-shaped section 3 hinged to said upper section, and having a recess in its free end adapted to fit over the projection on the upper section, substantially as described.

No. 30,397. Means or Device for Preventing Collisions on Railways. (*Moyens ou appareil pour empêcher les collisions de chemins de fer.*)

Heinrich C. Held, Zwolle, Netherlands, 14th December, 1888; 5 years.

Claim.—1st. An arrangement for ensuring the safety of trains in motion having movable tongues *c* (capable of rotation but fixed towards one or the other side of the track when required) provided by the side of the metals, in combination, with a lever arrangement *a* *b* on the locomotive actuating the steam-whistle or the brake-gear striking the tongue *c* when the train passes by the latter, the tongues *c* being so arranged as to be movable by a train which travels in the right direction, but will resist displacement by the lovers *a*, *b* on a train travelling in a wrong direction, the whole arranged substantially as described and shown, and for the purpose of actuating the whistle, or brake-gear, and the like, on a train in case of danger, substantially as specified. 2nd. In an apparatus for ensuring the safety of moving trains, the combination, of a tongue *c*, a lever *g* connected with the points, signals, gates, or bridges, (or with several of these) and the means for actuating these parts by the motion of the trains passing by or over the same, all as set forth and shown, and for the purposes hereinabove specified. 3rd. In the hereinbefore described arrangements for ensuring the safety of moving trains, the combination, with the tongue, or tongues *c* of electrical devices so as to ensure the center action of the station-mechanism (C Figs. 11, to 22), and the line mechanism (C Figs. 23 to 27), and of the tongue or tongues, all arranged and operating substantially as set forth and shown in the drawings. 4th. In safety mechanism such as described, the arrangement of electric contact-devices, whereby the operation of the tongue *c* is caused to transmit a current both backward, from the train, and forward therefrom.

No. 30,398. Carriage Top Spring. (*Ressort de capote de voiture.*)

Shepard W. Cately, Cortland, N. Y., U. S., 14th December, 1888; 5 years.

Claim.—A coil-spring for the arms, of the carriage-seat rails having on its inner end a hook to prevent the inner end of the coil from turning, and on its outer end a hook integral with the coil, adapted to fit over the vertical brace of the top, as set forth.

No. 30,399. Gear of Four Wheeled Vehicle.
(*Train de wagon*)

Orton P. Peckham, Corval, Dunwich, Ont., 14th December, 1888; 5 years.

Claim.—In a four-wheeled vehicle, the braces 1, attachments 2, and spring 3, arranged and combined substantially as and for the purpose hereinbefore set forth.

No. 30,400. Harrow. (Herse.)

George Gillies, Gananoque, Ont., 14th December, 1888; 5 years.

Claim.—1st. A harrow frame composed of channelled bars A, A', having the ribs *a, a'* notched at the intersection of the bars, and matched as set forth. 2nd. A harrow comprising the channelled bars A, A' having the ribs *a, a'* notched at the intersection of the bars, and matched together, and a tooth holder B, and spring tooth E secured to the intersection of said bars by a clip F, as set forth.

No. 30,401. Door Closer. (Sergent de porte.)

Robert A. Marrison, Iuverary, Ont., 14th December, 1888; 5 years.

Claim.—1st. In a door closer, the combination, of a bracket B adapted to be secured to the architrave, or frame, of a door having a spindle journalled in it, in a line with the centre of the hinges, and having bearings for a sliding bracket, or frame the spindle C journalled in said bracket B, and having its crankled foot adapted to be secured to a door, and carrying a cam, a cam G secured to said spindle C provided with a central frictional face *g*, having an indentation *g¹*, and double spur rings *g²*, a pinion H adapted to gear with said cam G, and having a frictional face *h*, and double spur rings *h¹*, and fast upon a spindle I; journalled in a sliding bracket L, a spring I¹ coiled upon said spindle I¹, and having one end made fast thereto, and the other secured to a ratchet wheel I² journalled upon said spindle I¹, a detent J pivoted in said bracket L, and gearing in the ratchet wheel I² operated by a spring J¹, and a thumb piece J², a bracket I carrying the pinion H, and having a stud I³ held slidingly in bearings on the brackets B, and eccentrically to the spindle C, and cam G, and a compression spring I⁴ coiled upon said stud I³, and held adjustably thereon by a milled nut I⁵, substantially as set forth. 2nd. In a door closer, the combination of a bracket P adapted to be secured to the frame, or architrave of a door, and provided with bearings for a vertical spindle, and for a sliding bracket, a vertical spindle C journalled in said bracket in line with the centre of the door hinges, and adapted to have its crankled foot secured to a door and to carry a cam plate, a cam plate G having a friction face *g* with an indentation *g¹*, a pinion H having a friction face *h* adapted to gear with the cam plate G, and to enter the indentation *g¹*, said pinion being upon a spindle, or axle, journalled in a sliding bracket I moving out of line or eccentrically with the spindle C, a bracket L having a stud, or pin I³ held slidingly in bearings on the bracket B, and eccentrically to the spindle C, a compression spring I⁴ coiled upon said stud I³, and held adjustably thereon by a milled nut I⁵, substantially as set forth. 3rd. In a door closer, the combination, of the bracket B having bearings *b¹, b²*, the threaded stud I³ carrying a bracket I, and having a neck adapted to slide in the bearing *b¹*, the milled nut I⁵ upon the stud I³ acting as adjustable stop for a coiled spring, the coiled spring I⁴ placed between the bearing *b²* and the nut I⁵ and the milled nut I⁵ upon the extremity of the stud I³, and having a long hub sliding in the bearing *b²*, substantially as set forth.

No. 30,402. Whiffletree. (Patonnier)

Luther M. Bissell, Addison, Ont., 14th December, 1888; 5 years.

Claim.—1st. A trussed evener having the tubular main bar A, a centre piece having formed in it the bulb hole B, and the slot C in which are the flanks D, and the tie rod H holding against said centre piece, and rivetted into the end hook pieces E, substantially as shown and described. 2nd. A trussed whiffletree having an open centre piece, the rim or body of which is considerably reduced in size at a point near its union with the main bar, in conjunction with a hook secured to the end of the evener, so formed that it can only be engaged to the centre piece by passing over its reduced part, substantially as shown and described.

No. 30,403. Window Screen. (Ecran de fenêtre.)

William C. Quackenbush, Komoka, Ont., 14th December, 1888; 5 years.

Claim.—An adjustable window screen consisting of a frame constructed in two parts A, B fitting into each other, so as to draw out, or push in, to match windows of various widths, and controlled by rods D, and springs E, said frames being filled in with wire gauze C, substantially as shown and specified.

No. 30,404. Rotary Engine. (Machine rotatoire.)

Alexander F. G. Brown, Swindridge, Muir Dalry, Scotland, 14th December, 1888; 5 years.

Claim.—1st. In a rotary engine, the combination of a cylinder having its interior recessed, as set forth, with admission ports leading from distributing valves to said recesses, a rotating segmental piston in said cylinder carried upon a crank on the main shaft, two or more arms arranged to alternately lie in and to be extended to the piston face from said recesses, said arms having exhaust ports thereon, substantially as described. 2nd. In a rotary engine, the combination of a crank arm secured on the main shaft, glands extending through the cylinder ends, and abutting against the sides of said arm, and a segmental piston carried by said arm, and rotating around said glands, substantially as described. 3rd. In a rotary engine, the combination of arms arranged to alternately lie in recesses within the cylinder, and to be extended therefrom to the piston face, spindles extending from said arms through an end of the cylinder, levers on said spindles, and a parallel motion arranged according to its position to hold said arms out of action, substantially as described.

No. 30,405. Stay Piece or Guard for Wire Fences. (Élai ou garde pour clôtures en fil de fer.)

The Wire Fence Improvement Company, (assignee of Sylvester F. Duncan), Chicago, Ill., U.S., 14th December, 1888; 5 years.

Claim.—1st. A stay-piece or guard for fences consisting of the sections B, C hinged together at their adjoining ends, and adapted to connect with horizontal fence wires, or rails, at their opposite ends, substantially as described. 2nd. The stay-pieces or guards composed of sections B, C hinged together at their adjoining ends, in combination with the main fence wires, or rails A, substantially as described.

No. 30,406. Lifting Jack. (Cric.)

Andrew Warron, (assignee of Louis J. Crecolius), St. Louis, Mo., U.S., 14th December, 1888; 5 years.

Claim.—1st. In combination in a lifting jack, a grip, and a lifting bar having a taper from upper to lower part, substantially as described. 2nd. In combination, with a lifting bar of a jack, a grip and an adjustable holding device therefor, whereby the grip may be gradually released and the weight lowered, substantially as described. 3rd. In combination, with the standard head of a jack, and with gripping devices in said standard and head, a lifting bar, and lever pivoted on the standard having cam faces bearing upon projections on the head, substantially as described. 4th. In a lifting jack having a standard provided with a holding grip, and a head provided with a grip, a grooved tapered lifting bar, and suitable operating means for lifting said bar, substantially as described.

No. 30,407. Manufacture of Railway Spikes. (Fabrication de chevillettes de chemins de fer.)

John T. Jones, Iron Mountain, Mich., U.S., 15th December, 1888; 5 years.

Claim.—1st. The improvement in the art of making railway spikes, consisting in incorporating or uniting with the web of a steel rail, a steel filling strip of the requisite cross section, then bringing this prepared rail by successive passes between rolls to the form of a plate, or blank, having a cross section corresponding in shape and dimensions to the outline of the spike, and finally cutting up said blank into spikes, and forming side ears or flanges upon the heads of said spikes, substantially as hereinbefore set forth. 2nd. The manufacture of railway spikes from steel rails, substantially in the manner described, that is to say, reducing the head, web and flange of the rail (with or without the addition of the filling strip *b* and welding strip *a*) by successive passes between rolls to the form of a blank having a cross-section of the outline of the spike, and then dividing said blank into spikes, all substantially as hereinbefore set forth. 3rd. The improvement in preparing the steel rail for the operation of rolling it into a spike blank, consisting in incorporating or uniting with the web of the rail, a steel filling strip of the requisite cross-section between which and the web of the rail is interposed a welding strip of iron, substantially as set forth.

No. 30,408. Blank for Railway Spikes. (Ebauche de chevillettes de chemins de fer.)

John T. Jones, Iron Mountain, Mich., U.S., 15th December, 1888; 5 years.

Claim.—A blank for railway spikes having parallel sides, and sides being bevelled off at one edge of the blank, and having a ridge formed on one side at the opposite edge of the blank, said ridge being bevelled off on both sides, substantially as shown and described.

No. 30,409. Scythe Fastener. (Ferrure de faulx)

Lewis R. Edwards, Charlemont, Mass., U.S., 15th December, 1888; 5 years.

Claim.—1st. The combination, with the bolt *j* having its head offset or elongated to one side only, and provided with the socket *m*, and teeth *k* of the fixed underplate, perforated at its upper end to receive said bolt, and provided with teeth to engage those upon the head, and with a perforation at its lower end for a loop-bolt, and said loop-bolt securing the tang near its junction with the blade directly to the end of the snath, the said offset bolt-head being arranged to depend toward the lower end of the snath, as set forth. 2nd. The combination, with the ring and plate, of the bolt *h* having the acute V-shaped loop, the bolt *j* having its head offset or elongated to one side only, and provided with the socket *m*, and teeth *k*, and the plate perforated at its upper end to receive said bolt, and provided with teeth to engage those upon the head, the said head being arranged to depend from the shank of the bolt toward the lower end of the snath, as set forth. 3rd. The combination, with the plate provided with the transverse rib *p*, and the short rib *q* arranged as described, of the bolt *j* having the head offset or elongated to one side only, and provided with the socket *m* and teeth *k*, and arranged to depend from the shank of the bolt toward the lower end of the snath, as and for the purpose set forth.

No. 30,410. Bicycle. (Bicycle.)

Wilber W. Spencer and Horace Spencer, Piqua, Ohio, U.S., 15th December, 1888; 5 years.

Claim.—1st. The combination, with the wheel, of the casting and its contained mechanism, and the fork secured to the extension of said casting, and braced substantially as described. 2nd. The combination, of the fork, with the casting secured to the fork, the clamp on the fork, and the stay-rod secured at one end to the clamp, and its other end adjustably secured to the casting, substantially as described. 3rd. The combination, with the fork, the casting secured thereto, the spur wheel on the spindle of the wheel, of the crown wheel journalled in the casting, the crank secured to the spindle of the crown wheel, and the removable cover, and the brace rod *b* connected at one end with the fork, and at its other end adjustably connected to said casting, all substantially as shown and described.

No. 30,411. Water Tap. (Robinet d'eau.)

Francis Hyde, Toronto, Ont., 15th December, 1888; 5 years.

Claim.—In a water tap constructed with the usual water ways B, B', and stem A, the combination of the inner stem a² with conical rubber or other suitable valve a¹, the plunger C with gasket e¹, the cap D with rubber or other packing thereon, the valve-seat A, and handle F, the whole constructed and arranged and operating as set forth.

No. 30,412. Dry Closet. (Sige d'aisance)

Charles G. Short, Oak Park, Ill., and The Fuller and Warren Company, Troy, N. Y., U.S., 15th December, 1888; 5 years.

Claim.—The combination of the seat pit, and urinal-room, and a heat-chamber, and draft-flue, the heat-chamber connecting the urinal-room and the seat-pit, and the latter connecting the heat-chamber with the draft-flue, whereby the air from the urinal-room is drawn through the heat-chamber, seat pit and draft-flue successively.

No. 30,413. Tooth Paste. (Pâte dentifrice.)

Benjamin E. Donham, Saulnierville, N.S., 15th December, 1888, 5 years.

Claim.—In a compound of borax, soda soap water, Paris white, rasgenosa, alba-aleo, chimaphylla, and glycerine, mixed in the proportions and for the purposes set forth.

No. 30,414. Manufacture of Soles and Heels. (Fabrication des semelles et talons.)

Charles L. Cotton, Dedham, Mass., U.S., 17th December, 1888, 5 years.

Claim.—The described method of forming heel lifts from two or more pieces of heater, consisting of first preparing the pieces for union with each other, uniting them, placing them in a suitable clamp, and finally cutting the lift therefrom, substantially as described.

No. 30,415. Globe or Shade for Gaseliers and Gallery for the Same. (Globe ou abat-jour de gazelier et support.)

Alfred Fox, Newcastle, Eng., 17th December, 1888, 5 years.

Claim.—1st. A globe or shade for a gaselier, adapted to be mounted in a gallery so situated that it does not obstruct the transmission of light downwards, substantially as described. 2nd. A globe or shade for a gaselier, adapted to be mounted in a gallery at its side, substantially as described. 3rd. A globe or shade for a gaselier adapted to be mounted in a gallery standing vertically to the branch of the gaselier, substantially as described. 4th. A globe or shade for a gaselier, in combination with a vertical gallery having a hollow rim, one portion of which supports the weight of the shade, while another part prevents it falling forward, substantially as described.

No. 30,416. Feed Water Heater and Purifier for Steam Boilers. (Réchauffeur épurateur de l'eau d'alimentation des chaudières à vapeur.)

David Stark, San Francisco, Cal., U.S., 17th December, 1888; 5 years.

Claim.—1st. An apparatus for heating and purifying feed water consisting of an inner filtering cylinder under pressure, and an outer shell or steam jacket provided with a copper heating coil leading from the supply pipe or cold water main into the head of the filtering cylinder, and adapted to discharge hot or heated water upon the filtering material when heated by exhaust steam admitted to the outer shell or steam jacket, as set forth. 2nd. The feed water heater and purifier herein described, consisting in an inner cylinder under pressure provided with an upper chamber and superposed filtering material, in combination with an outer shell or steam jacket having inlet and outlets, ports or pipes, and a water heating coil therein through which water heated by the exhaust steam from a boiler passes into the filtering chamber, as set forth. 3rd. In a feed water heater and purifier, the combination, with the hot water or draw-off chamber of the deflecting or sediment conducting plate H*, as and for the purpose specified. 4th. In a feed water heater and purifier, the combination, with the inner filtering and purifying chamber or cylinder, and outer shell and steam-jacket, of the man-holes K, K', K'', K''' for the purpose of removing, cleansing and replacing the filtering material, as specified.

No. 30,417. Elevator or Fire-Escape. (Ascenseur ou appareil de sauvetage.)

Horace A. Ste. Mario, Montreal, Que., 17th December, 1888, 5 years.

Claim.—1st. The combination, with the carriage A, of main and auxiliary framework composed respectively of bars B, K and L pivoted together, these several frameworks being also connected, and the drum or cylinder D for raising and lowering same, all as herein described. 2nd. The combination, with the framework composed of bars B, of the drum D connected with same by chains E, E', and provided with means for rotation and locking in place, and platform N attached to the drum D, and ropes P to drums Q also provided with means for rotation and locking, all substantially as and for the purpose set forth. 3rd. The combination, with the drum D, of the pulley G, bolt G', and lever H, all substantially as and for the purposes described.

No. 30,418. Composition of Matter called "The Champion Liniment." (Composition de matière dite "The Champion Liniment.")

Benjamin E. Donham, Saulnierville, N.S., 17th December, 1888; 5 years.

Claim.—A compound of starch, water, carbonate of soda, pulverized camphor, by means of alcohol, olive oil, lye, soap, turpentine, and strong liquor of ammonia, substantially in the proportions and for the purposes set forth.

No. 30,419. Combined School Desk and Seat. (Pupitre-sige d'école.)

(Pupitre-sige d'école.)

Nathan F. Canaday, Elizabeth Canaday, Hagerstown, Jacob M. Gough and Miles M. Canaday, Newcastle, Ind., U.S., 17th December, 1888; 5 years.

Claim.—1st. The combination, of a standard with an outwardly and upwardly projecting arm journalled thereto, substantially as set forth. 2nd. The combination, with a standard, and a vertically and laterally adjustable desk mounted thereon, of an arm journalled on said standard in vertical and lateral swinging adjustment, and a seat secured to said arm either rigidly or rotatively as may be desired, substantially as set forth. 3rd. The combination, with a standard, and a vertically adjustable desk mounted thereon, of an arm journalled to the standard and projecting outwardly beyond the desk, and provided at its free end with feet or supports adapted to rest on the floor, a standard secured to said arm near the free end thereof, and a seat secured to said latter standard, the said seat being located a sufficient distance from the desk-supporting standard to give free access to it from the seat, substantially as set forth. 4th. The combination, with a desk-supporting standard, and a seat having a rigid back, of a sleeve secured to the seat, a seat-supporting standard adapted to enter the sleeve, a recessed collar for locking the sleeve on the standard in any desired adjustment, and an arm connecting the seat-supporting standard with the desk-supporting standard, substantially as set forth.

No. 30,420. Measuring Rod. (Règle divisée.)

(Règle divisée.)

William Driscoll and James H. Connor, Ottawa, Ont., 17th December, 1888; 5 years.

Claim.—1st. A measuring rod composed of sections A, B, C having slots a, a', b, c coinciding longitudinally, and attached together by screws passing through said slots, and provided with thumb nuts, whereby the sections are adjustable endwise, as set forth. 2nd. The combination of the sections A, B, C slotted longitudinally, screws b₁, c₁, thumb screws a₁, a₂, and bracket arm D provided with a plummet F, and binding screw d₁, and thumb nut d₂, as set forth. 3rd. The combination, with the rod A having longitudinal slots a, a', and trammel point G, and the adjustable section C having a longitudinal slot c, trammel marker F₁, and the pinching screw, and the screws and nuts to fasten the sections at an adjusted position, as set forth.

No. 30,421. Tack Driving Machine. (Machine à chasser la broquette.)

(Machine à chasser la broquette.)

George W. Copeland, Malden, (assignee of Erastus Woodward, Somerville), Mass., U.S., 17th December, 1888; 5 years.

Claim.—1st. In a machine for feeding loose tacks from a hopper to a driving apparatus, the combination, of a wheel having an annulus of cells adjacent to its periphery, which cells are open through both faces of the wheel, and the walls of which cells on the periphery nearest the centre of the wheel are inclined toward the axis of the wheel, substantially as shown with a face guard extending from the bottom of the wheel to some point near its top, and with a pair of fixed deflectors, and a chute, substantially as described. 2nd. In a machine for feeding loose tacks to a driving mechanism, the combination with the reciprocating rockingslide E₅ provided with the transferring pin e₅, of the rocking latch m₁, substantially as described. 3rd. In a machine for feeding and driving loose tacks, the combination, of the reciprocating rocking slide E₅, with the barrel, and arm E₃, E₄, and with the stem e₅, substantially as and for the purposes described. 4th. In a machine for feeding and driving loose tacks, the combination, of the stem e₅ provided with a disc at its lower end and with an adjustable tension spring e₆ at its upper end with the barrel E₃, and rockingslide E₅, substantially as described. 5th. In a machine for feeding and driving loose tacks, the combination, of the pulley A, and the friction brake, having its fractional engagement upon the edge instead of upon the surface, a hopper, a bucket wheel, and suitable connecting gearing, substantially as described. 6th. In a machine for feeding loose tacks to a driving apparatus, the combination, with a chute, of a pair of deflectors K, a bucket wheel J open from side to side, and a face-guard L, substantially as described. 7th. The combination of a tack driver B, an actuating wheel A, an automatic clutching and braking apparatus tripped at the time, and by the act of placing the work in position, a tack hopper, and intermittently acting tack lifting wheel, a tack chute, and four-motion pan feed which carries individual tacks from the end of the chute to the driveway, all combined with one shaft, substantially as described. 8th. In a machine for feeding and driving loose tacks, a tack chute, a feedway in line therewith, and a transferring device, substantially as described for taking the tacks individually from the chute carrying them through the feedway in line therewith, and delivering them to the driveway, substantially as set forth. 9th. The combination, in a tack feeding and driving machine, of a movable nose, or equivalent tripping device, a train of mechanism, substantially as described, for connecting it with the driving shaft, a friction clutch thereon, a hopper with a rotating bucket wheel therein, and intermediate connecting mechanism, whereby upon the application of a shoe to the nose of the machine, said wheel is intermittently rotated, and a suitable tack chute, driveway and driving mechanism, substantially as described. 10th. In a machine for feeding and driving loose tacks, the combination, with a suitable roadway, of mechanism for arranging loose tacks or nails in a string therein, and a four-motion feed mechanism, substantially as described, for positively engaging the front tack of the string and depositing it directly under the driver, as set forth.

No. 30,422. Locomotive Engine.*(Machine locomotive.)*

Charles S. Smith and George H. Davis, Pocatello, Idaho, U. S., 17th December, 1888; 5 years.

Claim.—1st. The combination, with a boiler of the locomotive type provided with a smoke box, fire box, and one or more exhaust nozzles, of one or more pipes connected with the exhaust nozzle, or nozzles, and arranged to discharge steam into one or more of the tubes of the boiler, substantially as specified. 2nd. The combination, with a boiler, its fire box, smoke box and exhaust nozzles, of pipes coupled with said nozzles, and each coupled at its opposite end to the outlet end of a boiler flue, whereby combustion will be aided, and cinders and sparks prevented from leaving or entering the flues, substantially as set forth. 3rd. The combination, with the locomotive boiler A provided with the tubes a, smoke box B, and exhaust nozzles C, of the pipes b, b' inserted in the tube a, and connected with the tees d, and pipe communicating between the tees d and nozzles C, and provided with the valves f, substantially as specified.

No. 30,423. Piano Key Levelling Pin.*(Cheville de réglage des touches de pianos.)*

Walter A. Church, George W. Dennis and Frank Young, Clifford, N. Y., U. S., 17th December, 1888; 5 years.

Claim.—1st. A piano-key pivot pin consisting of two parts A and B, longitudinally adjustable upon each other, the part A being adapted to be driven and retained immovable in a piano cross-rail, the part B being provided with a flange at one end, substantially as described. 2nd. A piano-key pivot-pin consisting of two parts A and B, longitudinally adjustable upon each other, the part A being adapted to be driven and retained immovable in a piano cross-rail, and the part B being provided with a stem at one end, and a flange having a convex under surface b' at the other, substantially as and for the purpose described.

No. 30,424. Electric Brake for Railway Trains.*(Frein électrique pour trains de chemins de fer.)*

Watson P. Widdifield, Uxbridge, Ont., (co-inventor with Alexander H. Bowman, Packerton, Penn., U. S.), Anson L. Button, Uxbridge, and Samuel S. Fuller, Stratford, Ont., 18th December, 1888; 5 years.

Claim.—1st. In a system of railway brakes, the combination, of a brake adapted to be applied to car wheels of a railway train, and an electric motor, or similar electric device, adapted to release said brake. 2nd. In a system of brakes for a railway train, the combination, of an electric motor, or similar electric device, adapted to apply the brake, and a second electric motor adapted to release the brake. 3rd. In a system of electric brakes for a railway train, the combination, of an electric motor adapted to apply the brake, a second electric motor adapted to release the brake, two independent electric circuits respectively including said motors, a third electric circuit provided with an electro-magnetic closing switch for the first motor's circuit, and a suitable closing switch for the second motor's circuit, and electric generators in circuit with said motors, and with said electro-magnetic closing switch. 4th. In a system of electric brakes, the combination, of two friction pulleys, the one connected to the brake lever, and the other to the armature of an electro-solenoid, or similar magnet, and both being connected to each other, and to a collar upon the car axle, the said collar consisting of alternate collars, or rings of metal and fibre mounted upon the car axle. 5th. The combination, with the friction pulleys of a car brake, of a collar upon which said pulleys press, the said collar consisting of alternate metallic rings, and fibre rings mounted upon the car axle. 6th. In a system of electric brakes, the combination, of a friction pulley of a given size adjustably geared to the car axle, a mechanical connection between the axle of the pulley and the brake lever, and a smaller pulley of less diameter also adjustably geared to the said car axle, and connected through a chain with the operating lever of the large pulley, the said smaller pulley being connected to the armature of an electro-magnet which is included in a suitable electric circuit. 7th. In a system of electric brakes, the combination, of two friction pulleys, the one connected to the brake lever, and the other to the armature of an electro-magnet, and both being geared to each other, and to the car axle. 8th. In a system of electric brakes, the combination, of a car axle provided with a collar, a friction pulley supported upon a lever which is connected to the shaft of a pulley of smaller diameter, both pulleys being adjustable relatively to the said collar, a lever applied at one end to the smaller pulley, and at the other end elastically to the armature of an electro-magnet, a retaining device or clamp for the armature, said device consisting substantially of a rack and ratchet, and a second electro-magnet whose armature is in the path of the said ratchet, and adapted to release the same from said rack, the said magnets being included in suitable electric circuits. 9th. In a system of electric brakes, the combination, of an electric brake provided with a magneto-electric releasing device, the electric brake and the releasing device being in independent electric circuits, and a single switch being provided for both circuits. 10th. In a system of electric brakes, the combination with the armature of an electric magnet, of an elastic connection between the said armature and the lever, of the friction pulley of the brake. 11th. In a system of electric brakes, the combination with an auxiliary friction pulley, of an elastic connection between the pulley's lever and the armature of the operating electro-magnet. 12th. In a system of electric brakes for railway vehicles, the combination of a pulley in frictional contact with one of the axles of the wheels of the vehicles, a shaft carrying said pulley and supported at one end to a suitable bearing, and at the other end by one arm of a pivoted bent lever, a second pivoted lever hinged at one end to the remaining arm of the first lever, and at the other end to a chain, a second pulley in frictional contact with the said axle, and whose shaft is supported by a suitable bearing at one end, and upon one arm of a bent third pivoted lever at another point, the said shaft being connected to said chain, a second chain connecting the shaft

of the first pulley to the brake lever, an electro-solenoid, whose core is connected elastically to the arm of the lever, which supports the second pulley, a ratchet or toothed projection for the said core, and a ratchet gearing into said rack and a second solenoid, whose core is adapted to trip or ungear said ratchet, the said solenoids or similar magnets being included in independent electric circuits. 13th. In an electric braking system, the combination of two electric generators, the one A being located in the locomotive of the train, and cars to which the system is applicable, and the other A' being located upon the last car of the train, one or more electrical couplings connecting the conductors, which pass from the generators of which there is one more generator M similarly located, a conductor B, connecting similar poles of the first named generators, two other conductors connecting the remaining similar or like poles of the same generators, a magnet P in circuit with the last-named conductors B and C, and a second magnet p', being in circuit with the conductors B and D, a switch E normally open, and in conductor B a switch P normally open and in conductor C, both of said switches being located upon the locomotive, and on the rear car a switch P' normally open and in conductor C, and located on the last car of the train, the switches P and P' being of magnetic material, such as soft iron, and magnets Q and Q' located within attracting distance beneath the said switches P and P', and normally in closed circuit with battery M, by a conductor T and thereby maintaining said switches open against tension springs R and R', respectively connected to said switches. 14th. In combination with a system of electric brakes, an electric coupling, consisting of the combination of a metal frame hollow, and containing three electric terminals, V, V', V'', respectively belonging to the conductors B, C and D, and mounted upon insulation in the interior of said frame, and a terminal S mounted upon the exterior of the casing.

No. 30,425. Manufacture of Steel or Iron.*(Fabrication de l'acier ou du fer.)*

John H. Derby, Brymbo, North Wales, 18th December, 1888; 5 years.

Claim.—The improvements in carbonizing iron or steel, heretofore described, which consists of filtering, or causing the molten metal to pass into and through a layer of carbonaceous material, substantially as described.

No. 30,426. Pipe Joint.*(Joint de tuyau.)*

Alexander Keith, Toronto, Ont., 18th December, 1888; 5 years.

Claim.—1st. A pipe, having a socket formed on it, in combination with a pipe having a projection formed on its end to fit into the socket of the other pipe, the space between the socket and the projection being filled with cement or other suitable material, substantially as and for the purpose specified. 2nd. A pipe, having a socket formed on it, and an outwardly projecting flange or lugs formed around its end, in combination with a pipe having a projection formed on its end to fit into the socket, and surround the flange or lugs formed on the end of the other pipe, the space between the socket and the projection being filled with cement or other suitable material, substantially as and for the purpose specified. 3rd. A pipe, having a socket formed on it slightly below its end, which end has a flange or lugs formed around its end, in combination with a pipe having a projection formed on its end to fit into the socket, and surround the flange or lugs formed on the end of the other pipe, the space between the socket and the projection being filled with cement or other suitable material, substantially as and for the purpose specified.

No. 30,427. Sewing Machine.*(Machine à coudre.)*

James Moss and Charles B. Hunt, St. Lukes, Eng., 18th December, 1888; 5 years.

Claim.—1st. In a sewing machine, attaching a hook or looper bar I to a crank arm H, operated by revolving shaft J for circular motion, and to a link M for vertical elliptical motion of the hook while moving round in a circle from said crank, as and for the purpose described. 2nd. In a sewing machine, the particular formation of the shell C, with its dividing blades D and wings F for opening the loop out during the drag by the looper A, as described. 3rd. In a sewing machine, the piece R operated by a cam T on the under revolving shaft J, for moving the loop sideways to give clearance for the needle B in the next descending motion, and to enable the looper A to take a newly-formed loop and to make the stitch of the previous loop, as described.

No. 30,428. Machine for Making Nails and Spikes.*(Machine à faire les clous et crampons.)*

John T. Jones, Iron Mountain, Mich., U. S., 18th December, 1888; 5 years.

Claim.—1st. The heater, through which the blank passes to the knives, and in which it is heated to the extent needed to maintain it at the required heat at the cutting point, in combination with the knives and the feed rolls arranged and operated to grip between them the longitudinal edges of the heated blank, the combination being and acting, substantially as hereinbefore set forth. 2nd. In nail or spike making apparatus, the combination, with the cutting knives, of a heater movable to and from said knives, and provided with a passage along through which the blank is fed to the knives, substantially as and for the purposes hereinbefore set forth. 3rd. The combination, with the cutting knives of the swinging heater, provided with a passage for the blank, and adapted to be turned into and out of line with the knives, substantially as and for the purpose hereinbefore set forth.

No. 30,429. Tower Clock.*(Horloge.)*

George Hess, Zurich, Ont., 18th December, 1888; 5 years.

Claim.—1st. In a tower clock, the above described arrangement of parts for controlling and operating the mechanism employed in

striking the hours and quarters, substantially as hereinbefore specified. 2nd. In a tower clock, the above described arrangement of the escape wheel G, the lever H, with pallets J, J, and lever frame K, substantially as shown and specified. 3rd. In a tower clock, the above described arrangement of the mechanism controlling the hands on the dials, substantially as shown and specified. 4th. In a tower clock, the above described yoke C, and in combination therewith the pendulum rod A suspended from yoke by hooked end D, substantially as shown and specified.

No. 30,430. Paper or Bill File. (*Serre papier.*)

Arthur J. Wells, Syracuse, N. Y., U. S., 18th December, 1888, 5 years.

Claim—1st. In a paper or bill file, the combination, with a base, formed with longitudinal grooves in its edges, of a series of partitions provided with tongues to engage said grooves, whereby the partitions are readily adjusted to form a series of compartments of various sizes, substantially as and for the purpose set forth. 2nd. In a paper or bill file, the combination, with a base, of a series of detachable partitions adjustable to and from each other, substantially as and for the purpose set forth. 3rd. The combination, with the longitudinally grooved base A, of the metallic slides or partitions C, provided with tongues *c* to enter the grooved edges of the base, substantially as shown and described.

No. 30,431. Paper or Bill File. (*Serre-papier.*)

Arthur J. Wells, Syracuse, N. Y., U. S., 18th December, 1888, 5 years.

Claim—1st. The herein described paper file, consisting of a base adapted to lie upon a desk or table, and formed with a series of perforations, and adjustable partitions provided with steps removably fitting into the perforated base, substantially as and for the purpose set forth. 2nd. The combination of the base A and perforated plate B secured to its top, and the adjustable partitions B having the steps *a, c*, adapted to enter the perforations, substantially as and for the purpose set forth. 3rd. The base A, formed with a series of perforations C, and the adjustable partitions B, having the spring stops *a, c*, substantially as specified.

No. 30,432. Paper or Bill File. (*Serre-papier.*)

Arthur J. Wells, Syracuse, N. Y., U. S., 18th December, 1888, 5 years.

Claim—The combination of the base A, having rabbets *a* extending lengthwise in the outer edges thereof, rods *b* detachably secured to the base within the rabbets, and slides C having depending feet *c* and eyes *d*, through which the rods *b* pass, substantially as and for the purpose set forth.

No. 30,433. Apparatus for Regulating the Tension of Fencing Wires and for Testing the Same. (*Appareil pour régler la tension du fil de clôture et pour en faire l'épreuve.*)

John B. Evans, Mobus, Cape of Good Hope, 19th December, 1888; 5 years.

Claim—1st. An automatic tension adjuster, for adjusting each separate wire of a fence, composed of a spring and washers, with wires, as shown and described. 2nd. The application to fencing wire of the joining knot, as shown and described. 3rd. The application of a tension adjuster or spring to a hauling device for indicating the pressure, while straining fence wires. 4th. The machine for testing the wire and tension adjusters for fencing, as shown and described.

No. 30,434. Pipe Threading Die.

(*Coussinet pour fileter les tuyaux.*)

Friedrich Virgion, Yonkers, N. Y., U. S., 19th December, 1888; 5 years.

Claim—1st. The combination, with the block of a cutter-die, of radially guided cutters, having teeth or racks at one side, pivoted locking jaws, having toothed faces, a slide-ring provided with pins for engaging said jaws, and means for shifting the slide-ring, substantially as set forth. 2nd. The combination of a block, having radially aligned recesses at the inner and outer ends, radial cutters guided in said recesses and provided with teeth or racks at one side, pivoted locking jaws having toothed faces meshing with said racks, an interior slide ring guided in a groove of the cap, and provided with pins for engaging the jaws, means for shifting said slide-ring and means for locking it into position when shifted, substantially as set forth. 3rd. The combination of the main part and cap of the block, screw bolts for connecting the same, radially-guided cutters, having teeth or racks at one side, toothed locking jaws pivoted to said bolts, and a slide ring guided in a groove of the cap and provided with pins for engaging the jaws, so as to set the cutters in locked position, or expand the same, substantially as set forth. 4th. The combination of the block of a cutter-die, radially-guided cutters having teeth or racks, pivoted locking jaws, having toothed faces meshing with said racks, a recessed slide ring guided in the block and encircling the jaws and tapering fingers pivoted to said slide-ring and adapted to engage the locking jaws, so as to adjust the same and the cutters, substantially as set forth. 5th. The combination of the block of a cutter die, radially-guided cutters having teeth or racks at one side, pivoted locking jaws, having toothed faces, a side-ring having pins for engaging said jaws and setting the same, and an encircling slide ring having pivoted and tapering fingers for adjusting the jaws and cutters after they are set, substantially as set forth. 6th. The combination of the block of a cutter-die, radially-guided cutters having teeth or racks, pivoted locking-jaws having toothed faces intermeshing with said racks, slots at the inner and outer ends, a slide-ring, having pins for engaging the outer slots of the jaws, and a second slide-ring extending around the jaws and tapering fingers pivoted to the jaws and guided between the latter, and inclined recesses of the circumference of the block, substantially as set forth. 7th. The com-

bination of the block of a cutter-die, radially-guided cutters having teeth or racks at one side, pivoted locking jaws having toothed faces intermeshing with the toothed cutters, a slide-ring extending around the jaws, the pinion tapering fingers pivoted to the slide ring and guided between said jaws, and inclined recesses of the outer flange of the block and radial lugs attached to the slide-ring and extended to the outside of the block for setting the slide-ring, substantially as set forth. 8th. The combination of the block of a cutter-die, radial cutters guided by the same, said cutters having toothed middle portions and smooth ends, and pivoted locking jaws having toothed faces for locking said cutters, substantially as set forth. 9th. The combination of the block of a cutter-die, radially-guided cutters having teeth or racks at one side, pivoted locking jaws having toothed faces, a slide ring for engaging said jaws, a pin projecting therefrom through a slot in the die, and an adjustable stop for limiting the movement of the ring, substantially as set forth.

No. 30,435. Hot Water Boiler for Heating Buildings. (*Chaudière de calorifère à eau.*)

Robert J. Nott, Winnipeg, Man., 19th December, 1888; 5 years.

Claim—In a cast-iron sectional hot-water boiler, section having each a central water trunk rising vertically up from and over the middle of the furnace or combustion chamber, around which the flames and heated gases from same are caused to repeatedly circulate in passing along fire, or heating chambers, formed by hollow arms projecting out right and left from the main water trunk over each other, the main trunk being contracted within these spaces to admit of the passage of the flames, or heated gases, from one end of the chambers to the other, substantially as described, thereby placing the main column of water directly over the centre of the fire, thus causing the same to be surrounded and acted upon by the whole of the heat generated by the combustion of the fuel in the furnace.

No. 30,436. Screw Tap and Device for Cutting Threads of Stay-Bolt Holes in Fire Boxes, Boilers, etc. (*Filette et machine pour fileter les trous des boulons de serrage des boîtes à feu, chaudières, etc.*)

James T. Connolly, Huntington, W. V., U. S., 19th December, 1888; 5 years.

Claim—1st. The tubular screw tap, substantially as described. 2nd. The combination, of the tubular screw-tap, having its bore extending its entire length, with a guide rod upon which it works, substantially as described. 3rd. The combination, of the screw-tap having a longitudinal bore therein, with the guide rod or spindle having an enlargement at one end thereof, substantially as described.

No. 30,437. Enamel Surface for Carriages, etc. (*Surface d'émail pour les voitures, etc.*)

Melvin B. Church, Grand Rapids, Mich., U. S., 19th December, 1888; 5 years.

Claim—1st. The improved process of covering surfaces, consisting in first applying a mixture of pulverized calcined gypsum and glue suspended in water, and when this is dry applying thereto a coat of oil or varnish, substantially as described. 2nd. The improved process of covering surfaces consisting in first applying a mixture of pulverized calcined gypsum and glue suspended in water, and when this is dry, in rubbing the same smooth in oil or varnish. 3rd. The improved process of covering surfaces, consisting in first applying a mixture of pulverized calcined gypsum and glue suspended in water, and when this is dry applying thereto a coat of oil or varnish, and finally applying a coat of paint over the oil or varnish, substantially as described. 4th. The improved finish or covering for exposed surfaces, consisting of a sub-coat of calcined gypsum and glue, and a superficial coat of oil or varnish placed thereon, substantially as described. 5th. The improved covering or finish for exposed surfaces, consisting of a sub-coat of calcined gypsum and glue, and a coat of oil laid next thereon, and a superficial coat of paint, substantially as described.

No. 30,438. Process for Tanning Hides.

(*Procédé pour tanner les peaux.*)

Emilo Laurin-Schrenn, Lillo, Franco, 19th December, 1888; 15 years.

Resumé—Le procédé de tannage, consistant à maintenir les peaux dans le vide lorsqu'elles sont complètement isolées du jus et à les immerger complètement pendant tous les temps qu'on ne fait pas le vide.

No. 30,439. Machine for Reeling and unreeling Wire. (*Machine à renvider et dévider le fil de fer.*)

Archib L. Whitten, Russell, Iowa, U. S., 19th December, 1888; 5 years.

Claim—The combination, of the axle provided with carrying wheels, and having annular grooves, the beams D, the clips secured to said beams, and fitting in said grooves, the standards secured to the axle, the shaft mounted in the standards, the reel on said shaft, the keepers secured on one end of the reel, the pin inserted through said keeper, and the shaft, and the ring secured to one of the standards, and bearing against one end of the reel, as specified.

No. 30,440. Piston Head. (*Tête de piston.*)

Charles H. Steen, Topeka, Kan., and Milton McDonald, Streator, Ill., U. S., 19th December, 1888; 5 years.

Claim—In a piston head, the combination of a recessed disc, and

a follower with packing rings, a seat having a port leading from the cylinder into the recess, and a light screw plug or valve for controlling said port, the plug having a port outside of its axial line, substantially as described.

No. 30,441. Manufacture of Tea and Coffee Pots, Sugar Basins, Cream Jugs, Hot Water Jugs, Salad Bowls, Kettles, and other like Utensils.
(Fabrication des théières, cafetières, sucriers, pots à crème, pots à l'eau chaude, plat à salade, bouilloires, et autres ustensiles semblables.)

Arthur E. Furniss and James E. Furniss, Sheffield, Eng., 19th December, 1888; 5 years.

Claim.—A tea-pot, coffee-pot, or other utensil, having a lining of porcelain, china, or similar covered, with an outer casing of metal spun or fitted upon, substantially as and for the purpose specified.

No. 30,442. Instrument for Milking Cows and Remediating Obstructed Teats. (Appareil pour traire les vaches et dégorger les trayons obstrués.)

James Law, Ithaca, N.Y., U.S., 19th December, 1888; 5 years.

Claim.—A cow-milker or teat-dilator consisting of three or more fine divergent springs brought together, and united at one end in a blunt, smooth and slightly-rounded point, and receding from each other toward the other end so as to inclose a conical space, substantially as set forth.

No. 30,443. Cushioning Device for Steam Pistons. (Effet élastique de pistons de vapeur.)

Edwin F. Smith, Brooklyn, N.Y., U.S., 19th December, 1888; 5 years.

Claim.—1st. The combination, with the steam cylinder containing the steam piston, of a cushioning device for the piston at the lower extremity of its stroke, consisting of a pipe connecting the steam supply with the lower cylinder head, a swinging check-valve within said pipe, and a supply valve also in the pipe, and automatically opened by a suitable leverage connection having a tripper that is acted upon at the proper point by contact with mechanism upon the piston head, substantially as described. 2nd. The combination of the steam cylinder containing a steam piston whose piston rod carries a slide moving in guide ways, of a supplemental steam supply pipe entering the lower cylinder head, a swinging check-valve within said pipe, a second valve also within the pipe, and having a crank connecting by a link with a tripper lever pivoted on one of the guide ways in the path of the moving slide, oil adaptation to operate in the manner shown and set forth. 3rd. The combination, with a steam cylinder containing a steam piston, of a supplemental steam supply device for admitting an additional amount of steam to the lower end of the cylinder to cushion the descending piston, said device being automatically operated by suitable leverage connections with the piston rod, substantially as shown and set forth. 4th. The combination of the steam cylinder, A, guides K, K, piston B having slide J, supply pipe L, having valves H and G, and the operative mechanism for said valve G consisting of crank b, link E, and tripper F, all arranged to operate substantially as described.

No. 30,444. Winged Spoke Wheel.

(Roue à rayes a ailes)

John J. Magee, London, Ont., 19th December, 1888; 5 years.

Claim.—1st. As a new article of manufacture, the spokes S, S of a wheel having wings W, W on one edge thereof, substantially as and for the purpose set forth. 2nd. A wheel, the spokes of which have wings W, W on one edge, in combination with an inclined block B, substantially as and for the purpose set forth.

No. 30,445. Oiler. (Gilet à huile)

John F. Stairs, Halifax, N.S., 19th December, 1888; 5 years.

Claim.—1st. An oiler provided with a cylinder for holding lard, or other lubrication, a piston in said cylinder operated by slow moving mechanism, and service pipes for conveying the oil or lard from the cylinder, substantially as shown and described. 2nd. In an oiler, a piston moving in a cylinder for forcing lard or oil to the working parts of machinery, the rod of said piston being screwed through the cover of the cylinder and turned by suitable driving mechanism, substantially as shown and described. 3rd. In an oiling machine, the combination of the spindles J and N, screws I and M, and the worm-gear wheels G and L, with the screw-threaded piston rod D, having the key-way H to receive a spline fixed in the wheel G, and turning in the screw-threaded opening in the piston cover E, and the service pipes R, substantially as shown and described.

No. 30,446. Harness Attachment.

(Disposition aux harnais)

Joseph S. Coolidge, Washington, D.C., U.S., 19th December, 1888; 5 years.

Claim.—1st. The combination, with the case having curved projecting lips provided with eyes adapted to receive the straps 4 and 5, and pins secured to said casing to engage said straps, of a serviceable plate 8 covering said straps and pins, substantially as shown and described. 2nd. The combination, with the case having curved projecting lips provided with eyes to receive the straps 4 and 5, pins secured to said casing to engage said straps, a lug formed on the opposite side of said casing, and a spring adjacent to said lug, of a cap to engage said lug, and means for retaining the cap upon the lug,

substantially as shown and described. 3rd. In harness attachments the combination, with the case having a lug secured thereto, and a spring adjacent to said lug, of a cap adapted to engage said lug, substantially as shown and described. 4th. The combination, with the case having downwardly-projecting lips provided with eyes, straps passing through said eyes and pins to engage the straps, a lug formed on the case, and a spring adjacent to the lug, of a plate carrying removable traces and breeching straps, a lug secured to said plate, and a cap formed on one end thereof adapted to engage said lug, and a spring bolt in the case to engage the cap, substantially as shown and described.

No. 30,447. Fountain Pen. (Plume fontaine.)

John T. Wilcox and Albert W. Warron, Loomis, Mass., U.S., 19th December, 1888; 5 years.

Claim.—1st. In a fountain pen, the holder A closed at its upper end and provided with a reservoir 40, the pen proper B having the curved retainer 2, and tapered point f provided with the slit s, and the plug g disposed in said pen proper, and provided with the duct 45, said point and retainer being composed of hard rubber, or similar material, and formed integral or in one piece, and all constructed combined and arranged to operate substantially as described. 2nd. In a fountain pen, the elastic bulb D, in combination with the body provided with the reservoir 40, point f, retainer 2, and plug g having the duct 45, said point and retainer being composed of hard rubber and formed integral or in one piece, substantially as set forth. 3rd. In a fountain pen, the combination, of a point, a retainer, and a stock, said point and stock being composed of hard rubber, or similar material, and formed integral or in one piece, substantially as set forth.

No. 30,448. Screw Driver. (Tourne-vis.)

Felix Chantrell, James H. Sternbergh and Philip H. Sternbergh, Reading, Penn., U.S., 19th December, 1888; 5 years.

Claim.—1st. A screw-driver, or similar tool, consisting of a handle bored throughout its length, and a shaft or bit having its body passed through said bore, and its shank end connected with the handle by means of a bushing, or shank head, with uneven surface secured in the bore in the larger end of the handle, substantially as described. 2nd. In the tool described, a bit having a shank head secured in the larger end of the handle, substantially as set forth, the body of the bit extending through the smaller end. 3rd. In the tool described, a bit having a shank end adapted to engage with a bushing secured in the larger end of the handle, substantially as set forth, and a spring E arranged to throw them out of engagement. 4th. In the tool described, a bit having a tapered head of regular polygonal cross-section adapted to engage with a bushing secured in the handle, said bushing having its interior shaped to correspond with the head, for the purpose specified.

No. 30,449. Lamp Chimney (Cheminée de lampe)

E. Frank Woodbury, Boston, (assignee of John Raddin, Lynn), Mass., U.S., 19th December, 1888; 5 years.

Claim.—1st. A lamp chimney provided at its lower end with straight, or approximately straight, exterior longitudinal guideways, and between said guideways with outwardly-flaring elongated locking cheeks. 2nd. The combination of a lamp burner, the base plate of which is provided with a number of upwardly-projecting inwardly-curved spring clamps disposed at intervals around its periphery, and a lamp chimney fitting over said base plate and provided at intervals with straight, or approximately straight, longitudinal guideways for the passage of said spring clamps in adjusting or removing the chimney, and between said guideway with elongated outwardly-curved locking cheeks, the curvature of which corresponds approximately with the inward curvature of the clamps. 3rd. A lamp chimney provided at its lower end with straight, or approximately straight, exterior longitudinal guideways, and between the guideways with outwardly flaring elongated locking cheeks, said cheeks having vertical recesses. 4th. The combination of a lamp burner, the base of which is provided with a number of upwardly-projecting inwardly-curved spring clamps disposed at intervals around its periphery, and a lamp chimney fitting over said base plate, and provided at intervals with straight, or approximately straight, longitudinal guide ways for the passage of said spring clamps in adjusting or removing the chimney, and between said guideways with elongated outwardly-curved locking cheeks, the curvature of which corresponds approximately with the inward curvature of the clamps, said cheeks having vertical recesses in which said clamps may rest.

No. 30,450. Tag for Money Bags, etc.

(Étiquette pour sacs de monnaie, etc.)

Arthur A. Sprague, New York, N.Y., U.S., 20th December, 1888; 5 years.

Claim.—1st. The tag for money-bags, and similar packages herein described, consisting of a rectangular body adapted to be folded centrally upon itself, and provided with a flap at one end half the width of the body, the back of the flap and body being coated with adhesive material, substantially as shown and described. 2nd. A blank tag for money-bags, and similar packages, consisting of a body A, divided in two sections by a central longitudinal line a, and two smaller sections b, b₁ by a vertical line d, the large sections containing duplicate printed matter, the section b different printed matter, the section b₁ being blank, and a flap B one-half the width of the body aligning the section b, and similarly marked, the entire blank covered at the back with an adhesive material, substantially as shown and described. 3rd. As an improved article of manufacture, a tag for money-bags, and similar packages, consisting of a blank having the back covered with adhesive material, the said blank comprising a body A, and flap B, the said body divided into two large compartments A₁ printed in duplicate by the line a, and two smaller end compartments b, b₁ by the vertical line d, the one compartment b having matter printed therein, and the compartment b₁ being blank, the

a foresaid flap B aligning the compartment b having the same matter printed adversely thereon, contained in the said compartment b, substantially as herein set forth.

No. 30,451. Air Heating Stove.

(Calorifère à air.)

Milton C. Green, Kansas, Mo., U.S., 20th December, 1888; 5 years.

Claim—1st. An air heating attachment for stoves consisting of a hot air shell having the downwardly converging sides provided with cold air flues, and having its top in communication with the outer air, substantially as and for the purpose described. 2nd. In heating stoves, the combination, with the enclosing shells, of an interior suspended hot-air shell arranged above the frame, and provided with cold-air flues, and having apertures in said hot-air shell, and flues adapted to admit the partially heated air into the centre of the flange, as and for the purpose described. 3rd. In a heating stove, the combination of the usual shell B, the conical hot-air shell C suspended within said shell B directly over the fire pot, and having its upper portion in communication with the outer air, and cold air flues extending from the open air beneath the stove into the lower portion of the said conical shaped shell, the diameter of said flues gradually increasing as they approach the hot air shell, substantially as described. 4th. In a heating stove, the combination of the outer shells A, B, a conical hot-air shell suspended within said shells directly over the fire pot, and having an opening in its top portion, a flange M secured to said hot air shell and surrounding said opening therein, and also being secured to the top A, and cold-air flues having one end open to the air beneath the stove, and the opposite ends passing upwardly through the fire box, and opening into the lower portion of said hot air shell, the diameter of said flues gradually increasing as they approach said cone-shaped shell, substantially as described.

No. 30,452. Ingot for Making Seamless Plate-galvanised Wire. (Ingot pour faire le fil de fer galvanisé sans couture.)

Leri L. Burdon, Providence, R. I., U. S., 20th December, 1888, 5 years.

Claim—1st. As an improved article of manufacture, a compound ingot, having the form of a core or frustrum, substantially as hereinbefore described. 2nd. The compound ingot hereinbefore described, consisting of the base metal core portion, having one end somewhat larger in diameter than the other, and a seamless shell portion, having its interior substantially the same form and size as the core portion. 3rd. The compound ingot hereinbefore described, the same consisting of a base metal core portion somewhat larger at one end than the other, and having a reduced end, as b, adapted to first enter the reducing rolls, and a seamless shell of fine metal soldered to the core. 4th. The compound ingot hereinbefore described, the same consisting of a base metal core portion, somewhat larger at one end than the other, and a seamless shell of fine metal, having its interior substantially the same form and size as the core portion, and having a solder retaining chamber, a reservoir, as d, at the small end of the ingot, substantially as set forth.

No. 30,453. Method of Preparing Tobacco for Manufacture into Cigars. (Mode de préparation du tabac pour la fabrication des cigars.)

James E. Smith, Adolph Monells and Benjamin Lichtenstein, New York, N.Y., U.S., 20th December, 1888; 5 years.

Claim—1st. The method of making a cigar filler or bunch, which consists in cutting from a leaf of tobacco a blank, and forming in its edges a series of incisions, thus providing a series of projections of a shape conforming to the shape of the cigar to be produced, and then rolling the blank so formed upon itself to produce the bunch, substantially as described. 2nd. A blank for a cigar filler, made of leaf tobacco, having on both of its edges a series of incisions, forming a series of projections of a shape conforming to the shape of the cigar to be produced, substantially as described.

No. 30,454. Ironing Board. (Planche à repasser.)

Joseph Emery, Hamilton, Ont., 20th December, 1888; 5 years.

Claim—1st. The combination of the lever B, B, and the fulcrum C, thumb screw D, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the leg H and the pivot I, substantially as and for the purpose hereinbefore set forth. 3rd. The combination of the bosom board G, G, and the press board e, e, et, substantially as and for the purpose hereinbefore set forth.

No. 30,455. Buckle. (Boucle)

Leonard L. Conkey, Benton Harbor, Mich., U.S., 20th December, 1888; 5 years.

Claim—1st. A buckle tongue, operated by a coiled metallic spring, so as to hold it against the jaws or frame of the buckle. 2nd. A buckle tongue, provided with a slot in its outer end to hold in place the cable chain, rope, or strand. 3rd. A buckle, comprising in combination a frame or jaws A, a coiled metallic spring B and a tongue C, the outer end of which tongue C is provided with a slot e, and which tongue C turns upon a hinge B, in which hinge B is a coiled metallic spring D, so attached to the frame or jaws A and the tongue C that the tension will incline to hold the outer end of the tongue C against the outer end of the jaws or frame A, substantially as and for the purpose hereinbefore set forth.

No. 30,456. Bread Toaster or Meat Broiler. (Gril de cuisine)

James E. Harkins and James B. Willis, Ann Arbor, Mich., U.S., 20th December, 1888; 5 years.

Claim—1st. The combination, with the outer shell, having the

open windows of the suspended inner open work shell, and spring holders and encircling trough, substantially as specified. 2nd. The combination, with the outer shell having the open windows, and the top provided with a raised support on its upper face, of the suspended inner open work shell, the spring-holders and the trough surrounding the outer shell, substantially as specified. 3rd. The combination, with an outer shell, provided with windows and external holders for the purpose described, of the inner shell, formed of wire coiled, as described, and the hooked rods engaging the upper and lower coils of said inner shell, substantially as specified.

No. 30,457. Mail Bag Fastening.

(Ligature de valise à lettres.)

Thomas H. Gordon, Baldwinville, N.Y., U.S., 20th December, 1888, 5 years.

Claim—A mail bag having staples, a chain having rectangular links clasped together at the middle of their ends, and cut away on one side, leaving projecting ends, which are adapted to slide through the staples a, a, a, the close sides of said links being held to the mail bag by staples b, b, b, in combination with the lock c hinged directly to the said links, all substantially as shown and for the purposes set forth.

No. 30,458. Boot and Shoe Vamp. (Empoigne de chaussure.)

Louis Durocher, Montreal, Que., 20th December, 1888; 5 years.

Résumé—Un nouvel article de manufacture, une empoigne de chaussure on un seul morceau de cuir composée des parties principales A, C, D, D1 et E, décomposée de manière à donner les coutures ou profils a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, u, t, portant la dentelle (l, l, l, à boutons m, m, m, correspondant aux boutons n, n, n, ainsi que les poches F et G, le tout tel que ci dessus décrit et pour les fins susmentionnées.

No. 30,459. Water Closet. (Latrine.)

Albert Elmendorf, Stephen A. Gardner and Charles Prentiss, New London, Conn., U.S., 20th December, 1888; 5 years.

Claim—1st. In a water closet, the combination of a flushing stand pipe connected to the service pipe and ventilating extension thereof, with a ventilating pipe opening at its upper end into the stand pipe and at its lower end into the air space of the bowl, and a valve at its upper end opening toward the ventilating extension, all as and for the purpose described. 2nd. In a water closet, the combination of a flushing stand pipe connected with the service pipe and bowl, and a ventilating extension of said pipe with a ventilating pipe opening at its upper end into the ventilating extension of the stand pipe, and at its lower end into the air space of the bowl, the valve at the upper end of said ventilating pipe, and a float valve at the upper end of the stand pipe to stop the flow of water when said pipe is full, all substantially as described. 3rd. In a water closet, the combination of a flushing stand pipe, with a ventilating pipe connecting the air-space of the bowl with said stand pipe, and of the floating valve at the upper end of the stand pipe to cut off the flow of water, a valve in the stand pipe above its connection with the ventilating pipe opening upward and adapted to be closed by a current flowing down the pipe from the flue or roof pipe, and a valve in said ventilating pipe, all as and for the purpose set forth. 4th. In a water closet, the combination of the following elements, viz a flushing stand pipe, a cock connecting its lower end with the service pipe, a float valve at its upper end to cut off the flow of the water, a ventilating extension of said pipe, a ventilating pipe entering the stand pipe above the float valve, and opening at its lower end into the bowl, and a valve above the connection of the stand pipe and its ventilating extension to prevent undue air pressure from above, all as and for the purpose set forth and described. 5th. The combination of a flushing stand pipe, a ventilating extension thereof, a ventilating pipe connecting the stand pipe with the bowl and the valves, all as set forth, with the cock at the base of the stand pipe with its openings arranged as set forth, for filling the stand pipe while in one position, and flushing the bowl when in another position, and with the small drip orifice or pipe in the cock case to permit a slight flow of water to moisten the bowl while it is in use, and before the cock is opened for flushing, all as and for the purpose described. 6th. The combination of the stand pipe with its valves, the ventilating extension thereof, the ventilating pipe connecting said pipe with the bowl, and provided with its openings and valves, as set forth, the three-way cock located as described, with the drip pipe in its case, and a set screw for regulating the amount of flow of water through the same for moistening the bowl, all as and for the purpose set forth. 7th. The combination in a water closet of the following elements, viz: the stand pipe, the cock connecting said stand pipe with the service pipe and bowl, the ventilating extension of said stand pipe, the ventilating pipe connected to said ventilating extension and the bowl, and the valves and slip joint located at the junction of the stand pipe, the ventilating extension thereof, and the bowl ventilating pipe, all substantially as described.

No. 30,460. Screw Cutter. (Coussinet à fileter.)

Horace Brown and John Laxton, Toronto, Ont., 20th December, 1888; 5 years.

Claim—1st. A head A, having fixed to it the die B, and provided with a sleeve C to fit over the pipe or rod to be cut, in combination with a handle E journaled in the head A, and provided with pawls F and G to engage with teeth I in the said head A, substantially as and for the purpose specified. 2nd. A head A, having fixed to it the die B, and provided with a sleeve C to fit over the pipe or rod to be cut, a thread being cut on the said sleeve to correspond with a thread cut in the collar J, which is fixed to the pipe or rod to be cut, in combination with a handle E journaled in the head A, and provided with pawls F and G to engage with teeth I in the said head A, substantially as and for the purpose specified.

No. 30,461. Combined Truck and Weighing Scale. (*Charrot balance*)

Willard C. James, Boston, Mass., U.S., 22nd December, 1888, 5 years.

Claim.—1st. The combination of the truck frame, weighing levers supported upon said frame, and a suitable platform normally supported upon said frame and adapted to be turned laterally to bring said platform out of contact with said frame to rest upon said weighing levers, as and for the purpose specified. 2nd. The combination of a suitable frame weighing levers, provided with knife-edges and supported by said frame, and a platform supported upon said frame and adapted to be moved in one direction, to bring said platform out of contact with said frame to rest upon said weighing levers, and to be moved in the other direction to rest upon said frame and to lift said knife-edges from their bearing surfaces, as and for the purpose specified. 3rd. The combination of a suitable frame, weighing levers supported upon said frame, and weight-indicating devices supported on said frame below the top of the same, a suitable platform normally resting upon said frame parallel therewith, and covering and concealing said indicating devices, and adapted to be turned at an angle to said frame laterally to expose to view said indicating devices, and to cause said platform to rest upon said weighing levers, and out of contact with said frame, as and for the purpose specified. 4th. The combination of a suitable frame, weighing levers supported from said frame, and provided with knife-edges, a four-armed lever resting upon said knife-edges, anti-friction rolls journaled on the arms of said four-armed lever above the same, and a platform normally resting upon said frame, and provided with cams adapted when said platform is turned laterally to rest upon said anti-friction rolls, and to raise said platform out of contact with said frame, as and for the purpose specified. 5th. The combination of a suitable frame, weighing levers provided with knife-edges and suitably supported from said frame, a strap secured to the lower one of said levers, the platform turning on a centre, and an incline or cam secured to the under side of said platform, and curved concentrically with said centre, and adapted, when said platform is turned parallel with said frame, to engage said strap, and to raise said weighing levers and their knife-edges out of contact with their bearing surfaces, as and for the purpose specified. 6th. The combination of a suitable frame, weighing levers provided with knife-edges and suitably supported from said frame, a strap secured to the lower one of said levers, an anti-friction roll journaled on said strap, the platform turning on a centre, and an incline or cam secured to the underside of said platform, and curved concentrically with said centre, and adapted when said platform is turned parallel with said frame to run under said anti-friction roll, and to raise said strap and weighing levers, and to lift said knife-edges out of contact with their bearing surfaces, as and for the purpose specified. 7th. The combination of a suitable frame, weighing levers supported from said frame, a four-armed lever supported upon knife-edges with which said weighing levers are provided, a vertical stud secured to the top of said four-armed lever at the center thereof, a platform normally resting upon said frame parallel therewith, and having an opening to receive said vertical stud, a cam-plate having a central opening to receive said stud, and provided on its upper surface with inclines or cams, and a pin driven horizontally through said vertical stud above said cam-plate, whereby when said platform is turned laterally at an angle to said frame, said four-armed lever is allowed to rest upon said knife-edges, and whereby said four-armed lever is raised out of contact with said knife-edges when said platform is parallel with said frame, as and for the purpose specified. 8th. The combination of a suitable frame, weighing levers provided with knife-edges suitably supported from said frame, the lower one of said levers being provided with a strap, a four-armed lever adapted to rest upon other knife-edges with which said weighing levers are provided, and having a vertical stud projecting from the top thereof near the centre of the same, the platform, a cam-plate secured to said platform and having a central opening to receive said stud, and provided on its upper surface with inclines or cams, a pin driven horizontally through said stud above said inclines, and another incline or cam secured to the underside of said platform, and curved concentrically with the opening in said cam-plate, and adapted to engage with said strap, and to raise the weighing levers off from their supports when said platform is turned parallel with said frame, said inclines on said cam-plate being adapted to raise said four-armed lever when said platform is so turned by running under said horizontal pin, and having a greater inclination than the cam which engages with said strap, whereby when said platform is turned at an angle to said frame all of said knife-edges are in contact with their bearing surfaces but out of contact with said surfaces when said platform is in its normal position parallel with said frame, as and for the purpose specified. 9th. The combination of the truck frame, anti-friction rolls journaled on said frame, weighing levers, and weight-indicating devices supported from said frame, other anti-friction rolls supported by said weighing levers, a platform adapted to slide on said frame, tracks secured to the under side of said platform, and having depressions to admit said first-named anti-friction rolls to allow said platform to rest normally upon said frame, cams or inclines also secured to the under-side of said platform, whereby the sliding of said platform, as above described, will cause said cams or inclines to ride upon second-named rolls to raise said tracks off from said first-named rolls, as and for the purpose specified. 10th. In a hand truck, the combination of the frame, the lifting-piece, a pair of wheels of small diameter journaled near the front end of said truck, hangers secured to said truck and provided with slots, a pair of wheels of larger diameter having their journals in said slots, whereby said lifting piece may be depressed to load said platform without lifting said larger wheels, said small wheels being to facilitate the loading of said truck, and said larger wheels being to support said load, as and for the purpose specified. 11th. The combination of the scale truck-frame, the weighing levers supported thereby, and a hand-truck adapted to be supported upon and secured to said frame, or at will to be removed therefrom, as and for the purpose specified. 12th. The combination of a suitable frame, weighing devices supported thereby, and provided with a vertical stud, a pin driven through the upper end of said stud and projecting therefrom, a hand-truck having a central opening, a plate having a round hole

concentric with said opening of a sufficient size to receive said stud and having slots extending through said plate, and leading into said round hole to allow said stud and pin to be passed through said plate whereby said hand-truck may be secured to said frame, or at will may be turned until said slots are parallel with said pin, and lifted from said frame, as and for the purpose specified. 13th. The combination of the frame, weighing levers supported thereby, a stand supported upon said weighing levers and adjustable check-links connecting said stand and said frame, to prevent a lateral displacement or turning of said stand on said weighing levers, as and for the purpose specified. 14th. The combination of the frame, weighing levers supported thereby, a stand supported upon said weighing levers, said stand being provided with vertical pins and adjustable check links, each consisting of a piece having a hole to receive one of said vertical pins, and having also a screw-threaded hole, and a rod loosely connected to said frame, and screw-threaded to engage said threaded hole, as and for the purpose specified.

No. 30,462. Process of Refining Iron.

(*Procédé d'affinage du fer*)

Gustav Landenthal, Pittsburg, Penn., U.S., 24th December, 1888, 5 years.

Claim.—1st. The process herein described, of purifying cast or pig iron, which consists in first desilicizing and decarbonizing the metal, then adding aluminum to the molten metal, and bringing the same in contact with basic material to react on the phosphatic, and other impurities in the iron, as set forth. 2nd. The process herein described of refining iron, which consists in first desilicizing and decarbonizing the molten cast iron, then adding aluminum, and bringing the molten metal into contact with iron ore, or other suitable basic material, to react on the phosphatic and other impurities, then subjecting the charge to a puddling action until the metal is reduced to a wrought condition to form a ball or loop, as set forth.

No. 30,463. Respirator. (*Appareil respirateur*)

Joseph C. Locke, Point St. Charles, Que., 24th December, 1888, 5 years.

Claim.—1st. In a respirator, the combination of a tapering tubular shell, provided with perforations extending all around and throughout the greater portion of the said shell, and a fibrous air filtering mesh work, the fibres of which are threaded through the said perforations, substantially as described. 2nd. In a respirator, the combination, with a tapering tubular shell provided with perforations extending all around and throughout the greater portion of said shell, an air filtering mesh work formed of human hair, the fibres of which are threaded through the perforations, and an exterior protective coating, substantially as herein shown and described. 3rd. An improved nasal respirator, consisting of two tapering tubular shells, provided with perforations extending all around and throughout the greater portion of the shell, a fibrous air-filtering material, the fibres of which are threaded through the said perforations, an external protective covering, a yoke connecting the two shells, and a screw for adjusting the yoke, substantially as described. 4th. In a respirator, the combination, with a filtering device for the mouth, a pair of filtering devices for the nostrils, and an adjustable yoke uniting the nostril filtering device, of fastening devices connecting the yoke to the mouth filtering device, substantially as described.

No. 30,464. Graphophone or Apparatus for Recording and Reproducing Sounds. (*Graphophone ou appareil pour enregistrer et reproduire les sons*)

Charles S. Tainter, Washington, D.C., U.S., 24th December, 1888, 5 years.

Claim.—1st. In an apparatus for recording and reproducing sounds, the combination, with the recorder, of a flexible tube, or tubes, provided with mouth-pieces, and communicating with the space in front of the diaphragm of said recorder, and clamps or holders for attaching said tubes to the stand or table, substantially as described. 2nd. The combination in a sound recording and reproducing apparatus, of the recorder, a tube leading to the diaphragm thereof, two flexible tubes connected with said first-named tube by a two-armed socket, and clamps or holders for said tubes detachably secured to the stand or table, substantially as described. 3rd. The combination of the recorder, a flexible tube, or tubes, communicating with the space in front of the diaphragm of said recorder, clamps or holders for attaching said tubes to the stand, or table, and a bracket or holder for said recorder when not in use, substantially as described. 4th. The combination in a graphophone, of the frame, the main shaft supported in bearings therein, the tablet-holder removably supported in said frame, and gearing for rotating said tablet-holder from the main shaft, substantially as described. 5th. The combination of the frame provided with forked supports, the spring latches, and the tablet-holder having collars, one at each end for insertion in said supports, said collars constituting the journal boxes or bearings for the tablet-holder, substantially as described. 6th. The combination of the frame having forked supports, the cylindrical tablet-holder, the collars thereon adapted to rest in said supports, one of said collars being grooved, and the spring latches for holding the tablet-holder in said supports, substantially as described. 7th. The cylindrical tablet-holder increasing at one end to a larger diameter than the main portion of the holder, substantially as described. 8th. In a graphophone, the combination, with the main shaft, of the tablet-holder, a gear wheel connected therewith by a yielding connection, and gearing for driving said tablet-holder from said main shaft, substantially as described. 9th. The combination of the main shaft, the tablet-holder, a gear mounted on a collar loose on said holder, a spring connecting said collar and holder, and intermediate gearing between said shaft and holder, substantially as described. 10th. The combination, with the recorder and reproducer, of the carriage having sockets for supporting the same, a stationary track or way on which said carriage slides, a feed screw, and a nut carried by said carriage and engaging said screw, substantially as described. 11th. The combination of the fixed tube having a long-

tudinal slot, the feed screw within said tube, the carriage sliding on said tube, the arm attached to said carriage, and the nut carried by said arm, and engaging said screw, substantially as described. 12th. The combination of the fixed tube, the inclosed feed screw, the carriage sliding on said tube, and the nut engaging said screw, and the pivoted arm carrying said nut, whereby the latter may be disengaged from said screw, substantially as described. 13th. The combination of the fixed tube, the inclosed feed screw, the carriage, the anti-friction wheels on said carriage in contact with the surface of said tube, the lever arm, and the segment of a nut carried thereby and engaging said feed screw, said wheels and nut which constitute the bearing points of the carriage being arranged at approximately equal distances apart, with respect to the axis thereof, substantially as described. 14th. The combination, with the fixed tube, the carriage sliding thereon, and the feed screw, of a lever arm pivoted to said carriage, a nut on said arm, and a weight for holding said nut in engagement with said feed screw, substantially as described. 15th. The combination of the fixed tube, the carriage sliding thereon, the feed screw, the nut engaging therewith, the lever carrying said nut and pivoted to said carriage, and the reproducer pivoted in said carriage, and having a projection overlapping the end of said lever, so that by pressing on said projection the style is lifted from the record, and the nut simultaneously disengaged from the feed-screw, substantially as described. 16th. The combination, with the tablet-holder, of the sliding carriage for the recorder and reproducer, said carriage being provided with an indicator finger having its points close to the surface of the tablet-holder, substantially as described. 17th. In a sound recording or transmitting device, the combination, with a diaphragm responsive to sonorous vibrations, of a disk forming an air-chamber in front of said diaphragm, said disk being provided with a number of apertures arranged in series dividing the diaphragm into rings of equal width, and said apertures being connected with a common mouth-piece, substantially as described. 18th. The combination, with the diaphragm, and a sound-conveying tube, of a conical deflector having its apex in the axis of said tube, a casing or top piece, and a perforated disk or disks interposed between said top piece and the diaphragm, the perforations of said disks being so disposed as to constitute sound passages all of the same length but leading to different points on the surface of the diaphragm, substantially as described. 19th. In a graphophone, the combination, with the tablet-holder, and feed screw, of the sliding carriage provided with sockets, and a recorder having trunnions for resting in said sockets, whereby it can be readily placed on, and removed from, said carriage, substantially as described. 20th. The combination, with the diaphragm of the reproducer, of the rubbing-style consisting of a lever having the rubbing point formed on one arm, and the other connected with said diaphragm, substantially as described. 21st. In a reproducer adapted to rest by gravity on the record, the combination with the standard, of a style supported in the free end thereof, a diaphragm mounted near the other end thereof, and a connection between the style and diaphragm, substantially as described. 22nd. The combination of the standard, the style consisting of a lever pivoted at one end thereof, the diaphragm supported near the other end, and a thread connecting one arm of said lever with the diaphragm, substantially as described. 23rd. The combination of the hollow standard, the diaphragm mounted therein, the style pivoted in the end thereof, and the thread inclosed in said hollow standard, and connecting the style and diaphragm, substantially as described. 24th. The combination, with the diaphragm, of the pivoted style, said style being connected with the diaphragm at a point nearer its fulcrum than the point that rests on the record, substantially as described. 25th. In a graphophone, the combination, with the main shaft, the feed screw and tablet-holder, and gearing for driving the same from said main shaft, of a clutch for starting and stopping said shaft at will, substantially as described. 26th. In a graphophone, the combination, with the main shaft, the feed screw, and tablet-holder, and gearing for driving the same from said shaft, of a wheel or pulley for driving said shaft mounted loosely thereon, and a clutch for engaging said shaft with said pulley or wheel when desired, substantially as described. 27th. In a graphophone, the combination, with the main shaft, driving pulley, tablet-holder, and carriage for the recorder or reproducer operated from said main shaft, of the clutch mechanism for connecting and disconnecting said shaft and pulley, and the key-lever carried by a rock-shaft connected at one end with said main shaft for operating said clutch mechanism, substantially as described. 28th. The combination, with the tablet and tablet-holder, and driving mechanism for the latter, of a rotating brush having a pinion on its spindle adapted to engage one of the gears of the machine when the brush is brought against the surface with the tablet, substantially as described. 29th. The combination, with the tablet, tablet-holder and driving mechanism, of the cylindrical brush having bearings in a swinging frame, so as to hang normally free of said tablet but adapted to be brought into contact therewith, and simultaneously thrown into gear with said driving mechanism, substantially as described. 30th. The combination, with the tablet, tablet-holder and driving mechanism, of the brush having bearings in a swinging frame hanging clear of the tablet, a pinion for engaging one of the gears, and a spring for moving the frame laterally to hold said pinion normally out of the plane of rotation of said gear, substantially as described. 31st. The combination of the tablet-holder, the wax-coated tablet, the cylindrical brush carried in a swinging frame, and the tray beneath the brush and tablet, substantially as described. 32nd. The combination, with the tablet, and tablet-holder, of the toothed plate or comb lengthwise of said tablet, and having the points of its teeth in close proximity to the surface thereof, substantially as described. 33rd. The combination, with the pivoted reproducer having a suitable socket-piece provided with a sound-opening on its periphery, of a sound-conveying tube having its end in close proximity to the said socket piece around the said opening leaving a small space so as to avoid friction, substantially as described.

No. 30,465. Graphophone, or Apparatus for Recording and Reproducing Sounds. (*Graphophone ou appareil pour enregistrer et reproduire les sons*)

Charles S. Taintor, Washington, D.C., U.S., 24th December, 1888, 5 years.

Claim.—1st. In a graphophone, the combination, with the feeding and driving mechanism, of duplicate tablet-holders and duplicate recorders, each having a diaphragm and style, the air-chambers adjacent to said diaphragms being connected with a common speaking-tube or passage, substantially as described. 2nd. In a graphophone, the combination of the duplicate tablet holders and tablets, the feed-screw, the recorder carriage adapted to be driven by said screw, and the two recorders, one for each tablet, both supported by said carriage and connected by a sound tube or passage, substantially as described. 3rd. In a graphophone, the combination, with the feed-screw and guide tube, of holders for two tablets, one on each side of said feed screw, the carriage adapted to slide on said guide tube, and the two recorders hanging one on each side of said carriage, substantially as described. 4th. In a graphophone, the combination, with the feed-screw and guide-tube, of the carriage, comprising a sleeve in two parts, hinged together and adapted to embrace said tube, substantially as described. 5th. In a graphophone, the combination, with the feed-screw and guide-tube, of the carriage, comprising a two-part sleeve, a recorder rigidly attached to said carriage, and a second recorder attached removably to said carriage, substantially as described. 6th. In a graphophone, the combination, with the feed-screw and guide-tube, of the carriage, comprising a sleeve divided lengthwise into two parts, said parts being hinged together, a recorder rigidly attached to said carriage, and a second recorder pivoted thereto at the hinges connecting the two parts, substantially as described. 7th. In a graphophone, the combination, with the feed screw and inclosing guide-tube, having a slot with curved edge, of the carriage, having a segmental nut for passing through said slot and engaging said screw, said nut having a bevelled edge and a spring for holding said nut in engagement with said screw, substantially as described. 8th. In a graphophone, the combination, with the driving mechanism and a hollow cylindrical recording tablet, of a tablet-holder, comprising two rotatable disks for clamping the tablet between them, substantially as described. 9th. In a graphophone, the combination, with a hollow cylindrical tablet, of the two holding-disks bearing against opposite ends thereof, one of said disks being movable toward and away from the other, substantially as described. 10th. In a graphophone, the combination with a hollow cylindrical tablet, of the two holding disks, adapted to clamp the tablet between them, one of said disks being movable toward and away from the other, and a spring bearing on said movable disk, substantially as described. 11th. In a graphophone, the combination with the feed-screw and tablet holder and gearing for driving the former from the latter, of clutch mechanism, comprising a rod passing through the bearing of said tablet-holder and adapted to lock the same to the driving pulley or release it therefrom, substantially as described. 12th. The combination, with the feed-screw and guide-tube, of the reproducer carriage, comprising a frame having curved arms, a segmental nut having pivoted arms, and a spring pressing the two parts together, substantially as described. 13th. The combination, with the feed-screw and guide-tube, of the reproducer carriage, comprising the frame with curved arms, the nut on the pivoted support and the curved locking device, substantially as described. 14th. The combination, with the feed-screw and guide-tube, of the carriage, the reproducer pivoted thereto, the nut on a pivoted support, and the locking device, comprising semicircular arms, pivoted to said frame at or approximately at the intersection of a line drawn through the axis of the guide-tube, with a perpendicular line drawn from the pivot of said reproducer, substantially as described.

No. 30,466. Mounting of and Fittings for Dressing and Cheval Looking-Glasses, etc. (*Montage des miroirs et psychés, etc.*)

Edwin Haines, Paddock Wood, Eng., 24th December, 1888; 5 years.

Claim.—1st. The stationary fitting *b*, with lugs *c* and *d*, in combination with the ring *a*, which is applied to a rotatable part working in connection therewith, and works between the lugs *c* and *d*, substantially as and for the purpose set forth. 2nd. The fitting *b*, adapted to be fixed to a swing looking-glass stand, and provided with lugs *d* and *c*, the latter having an oval hole for a pivot *e* that is secured to the looking-glass, in combination with a ring *a* that is adapted to be secured to the looking-glass, and works between the lugs *c* and *d*, substantially as and for the purpose set forth.

No. 30,467. Process and Device for Refining Metallic Ores. (*Procédé et appareil d'affinage des minerais métalliques*)

Henry H. Eames, Baltimore, Md., U. S., 24th December, 1888; 5 years.

Claim.—1st. In refining metallic ores, the method of placing the ore to be treated in a closed vessel out of contact with the air and other extraneous gases, the ore in this air-tight condition being raised to the required temperature by the transmission of heat through the material forming the vessel, whereby the ore will be heated out of contact with the gases of combustion, and then in this heated and air-tight condition causing an electric current to pass through the entire mass of the ore, for the purpose set forth. 2nd. A device for refining metallic ores, consisting of a retort provided in the interior thereof with insulated metallic plates, which form the terminals of a dynamo or galvanic battery, said plates extending nearly or wholly the length of the said retort, and secured sufficiently far apart one from the other, to prevent the passage therebetween of the electric current, without an intervening conductor, the ore to be treated by which the electric circuit is completed between the said plates, and the current thereof distributed through the mass of the ore, and means for heating the ore in the retort, for the purpose set forth. 3rd. In a device for refining metallic ores, the combination of a closed retort lined with some suitable insulating material, the insulated plates 22, 23 forming an additional partial lining to the said retort, the said plates forming the electrodes of a dynamo or galvanic battery, the ore to be treated by which the electric current is completed between the said plates, a vent 14 to said retort, having therein the trap 15, a sliding bottom 11 for discharging the retort, and means for

heating the ore in the retort, for the purpose set forth. 4th. In a device for refining metallic ores, the combination of a closed retort, insulated metallic plates placed in said retort, the said plates extending nearly or wholly the length of the retort, and forming the electrodes of a dynamo or galvanic battery, the ore to be treated by which the electric current is completed between the said plates, means for heating the ore, a perforated sliding bottom provided in the bottom of the retort, and a receiving vessel provided with a sliding cover which may be attached to, or removed from the bottom of the retort, for the purpose set forth.

No. 30,468. Incandescent Electric Lamp Holder and Cut-Out. (*Porte-lampe électrique incandescente et interrupteur.*)

Charles Heisler, St. Louis, Mo., U. S., 24th December, 1888; 5 years.

Claim.—1st. In combination, an electric lamp permanently in the main circuit through the core of an electro-magnet, having two spools on one core, a second lamp, one terminal of which is connected with the main line by a shunt through the core of the electro-magnet, which is normally open while the first lamp is operating, connection between the coil of one spool, and one terminal of the second lamp, an armature operated by the electro-magnet to close the circuit of said lamp through the core, a second switch arranged to short circuit the lamps through the core, a switch between the second coil on the electro-magnet, and the line normally open and closed by the first switch of the electro-magnet to form connection with the main line and a second armature to operate the switch, which short-circuits the lamp, all substantially as described. 2nd. In combination, the core D, having the pole flanges *f, g*, and its armatures and coils, an electric lamp, having one terminal connected directly to the lower flange, and to the line through the upper flange and its other terminal connected to the line through a conducting piece supported upon a flange of the core, but insulated therefrom, whereby the circuit of the lamp is through the core of the electro-magnet, a second lamp, having one terminal connected to the same conducting piece with the second terminal of the first lamp, and its other terminal connected to the line through the switch released by an armature K, when the first lamp ceases to work by means of the coil *l*, whereby the second lamp is placed in circuit, a second switch arranged to short circuit both lamps, and released by an armature K₁ controlled by the coil *l* in circuit with the main line through a switch, as 13, 14, all substantially as described. 3rd. In combination with two spools, having a common iron core, flanges upon the ends of said core, and an intermediate flange forming one common pole piece, combined with two armatures, substantially as described. 4th. In combination, the core D having the pole pieces *e* and *f*, the armature K and the switch lever H, said armature and switch-lever being supported by the said flanges *e* and *f*, substantially as described. 5th. In combination, the core D, common to two spools, and having flanges *e* and *g* and intermediate flange *f*, the armatures and switch levers, all of said parts being supported by the flanges, substantially as described.

No. 30,469. Incandescent Electric Lamp Holder and Cut-out. (*Porte-lampe électrique incandescente et interrupteur.*)

Charles Heisler, St. Louis, Mo., U. S., 24th December, 1888; 5 years.

Claim.—1st. In combination with an electric lamp and an electro-magnetic shunting mechanism, the core of which is directly connected to one of the lamp terminals, and forms a part of the circuit between that terminal and one of the line wires and having its coil in a circuit around the lamp, a switch operated by the electro-magnet and arranged to short circuit the lamp, all substantially as described. 2nd. In combination with an electric lamp, a magnet core, the coils of which are in shunt with the lamp circuit, and having flanges on its end acting as pole pieces, the flange at one end being connected permanently to one of the lamp terminals, the flange at the other end connected to binding posts, one insulated and the other uninsulated thereon, connections between the insulated post and the other lamp terminal, whereby the lamp circuit is formed through the core, and a magnetic shunt operated by the armature of the electro-magnet, when the lamp fails to work, all substantially as described. 3rd. An electro-magnet, having a core formed with flanged or extended pole-pieces attached on one end to one of the terminals of a lamp, binding posts upon the flange of the other end, with bracket connections and with binding posts, one insulated from the flange and connected to the other lamp terminal, and the other uninsulated on the same flange, a coil about the core in shunt with the lamp circuit, an armature hinged upon the flange of one end of the core, and extending in front of the edge of the flange on the other end, a conducting lever arranged when down to short circuit the lamp, and normally held up by a shoulder on the armature, but arranged to be released when the armature is attracted to the core, all substantially as described. 4th. In combination with an electric lamp and an electro-magnet, a switch, one end of the core of the electro-magnet being rigidly connected to the bracket, as A, and the other end rigidly connected to the lamp, the core with its extension forming the sole connection between one of the lamp terminals and bracket, all substantially as described. 5th. In combination with the upper and lower flanges of the core of the magneto-electric switch, a socket for the lamp terminal connected directly to the lower flange, and electrically connected to a binding post on the upper flange, an extension of a second socket for the lamp terminal electrically connected to the other binding post, also supported on the upper flange, an insulating disk at each end of the electro-magnet and supported thereon, substantially as described. 6th. In combination with an electric lamp, an electro-magnet, the core of which forms a part of the permanent circuit of the lamp, the armature of which controls a shunting lever for short circuiting the lamp, a flange on one end of the electro-magnetic core, a manual switch and bearing for the switch key on said flange, all substantially as described. 7th. In combination with an incandescent lamp, an electro-magnet having its coil in shunt with the lamp circuit, a flange on one end of the core of the magnet supporting a manual and a thermal switch, an electro-magnetic switch, controlled by the armature of the electro-magnet, and

a fusible block interposed between the surface of the flange and the thermal switch, whereby, under the influence of the alternating currents, the block may be melted and the switch operated, all substantially as described. 8th. In combination with the lamp, the electro-magnet and its armature, hinged on one flange of the core and extending before the other, a conducting lever pivoted on one side of the flange and extending around to a point opposite the free end of the armature and contact piece in circuit, all substantially as described. 9th. In combination with the lamp and the electro-magnetic switch therefor, the pole of the magnet being in a lamp circuit, the flange forming one pole of the electric magnet, a binding post fixed and insulated on the flange, an extension of said binding post to complete the lamp circuit, an insulating disk supported on the posts, and a shank having legs attached to the disk, whereby the disk is connected to the bracket, all substantially as described. 10th. In combination with the lamp, the electro-magnetic switch therefor, the core of the magnet being in the lamp circuit by means of a binding post on a flange on one end of the core, and a raised portion on a flange at the other end of the core to which the lamp socket is fixed and a binding post and connections to complete the lamp circuit, all substantially as described. 11th. In combination with the pole piece of the core of the electro-magnetic switch of an electric lamp a fusible block resting on the pole piece and normally sustaining a spring switch out of contact with a piece *k*, which is in connection with the lamp circuit and underneath the spring switch, the fusible block being located near, but separated electrically from the piece *k*, all as and for the purpose set forth. 12th. A spring for the manual switch, and a spring for the thermal switch, both combined with a single screw and with sleeves thereon, substantially as described. 13th. In combination, the electro-magnet with its core and flange, the automatic short-circuiting lever pivoted upon the lower flange of the core, and bent around the core of the described cut out, substantially as described. 14th. In combination, the electro-magnet with its core and flanges, the automatic short-circuiting lever arranged around the core, as described, and having its pivot upon the lower flange, and the spring *r* fixed to the upper flange and bearing upon the lever above its pivot, substantially as described. 15th. In combination, with the upper disk, of the cut-out mechanism, the bridge having a hollow boss, said bridge holding the disk and the cut-out mechanism to the pipe fastening, and the wires passing through the hollow boss of the bridge and carried outwardly through the opening in the bridge to the binding posts, substantially as described. 16th. In combination with the lower flanges of the iron core of the cut out, a lamp socket attached directly to said flange, as described.

No. 30,470. Regulator for Dynamo-Electric Machine. (*Régulateur de machine dynamo électrique.*)

Charles Heisler, St. Louis, Mo., U. S., 24th December, 1888; 5 years.

Claim.—1st. In combination, with the dynamo or current-generator, an electro-magnet and an armature carrying an index finger operated by the magnet, and means for moving the armature in opposition to the power of the magnet, and a shoe carried on the extension of the index finger, pawls controlled by this shoe, a constantly operating shaft connected to and acting on the pawls, and a shaft operated by the pawls, and connected with the brushes of the generator, whereby the said generator is regulated. 2nd. In combination with the shaft driven constantly by the motor eccentrics on said shaft, and lever-carrying pawls adapted to act alternately on ratchet wheels on a shaft connected with the brushes, and a shoe acting on the extension of the index finger acting to control the pawls, the ratchet wheels and index finger, and their supporting connections being also in the combination whereby the said brushes are moved to regulate the current, substantially as described. 3rd. In combination with the shaft 8 carrying eccentrics, the levers *e, e* and spring for keeping them in contact with the eccentrics, pawls 10, the shaft 9 carrying ratchet wheels, said shaft being connected to, and combined with the brushes, arms 11 on the ends of the levers *e, e*, and a device carried by and combined with the armature of the electro-magnet for controlling the said levers, substantially as described. 4th. In combination with the levers *e, e*, and the shaft for operating the same, pawls carried upon said levers, a shaft connected to the brushes, mutilated ratchet wheels on said shaft, and means operated by an electro-magnet for controlling the levers *e*, the brushes, the electro-magnet and their supports, and necessary connections being also in the combination, whereby the ratchet wheel may be operated by the pawl to a limited movement extending in either direction to regulate the current, substantially as described. 5th. A constantly revolving shaft, a shaft connecting and combined with the brushes, and mechanism for intermittently applying the force of the constantly revolving shaft to the brushes, an index plate, and index finger moved by an electro-magnet in the circuit, and a spring, and shoe on an extension of the index finger controlling the mechanism which moves the brushes, substantially as described. 6th. In combination with a dynamo machine working on two or more circuits, a regulator for each circuit having a shaft common to each, with gearing combined with and driving it constantly, and a shaft for moving each of the brush holders, and the common shaft by one of the regulators, whereby each line has automatic regulation, and all the circuits have control of each line, substantially as described. 7th. In combination with the regulators for each line, the cams 1 on the shaft 3 of each regulator, the shaft 12 having arms, whereby it is moved by the cams 1, levers 21 acting with the mechanism to move the brushes, and dogs carried by the shaft acting to control the levers 21 substantially as described. 8th. The combination, with the levers *e, e* of the regulator, and the dog E adapted to slide from said levers, substantially as described. 9th. In combination with the index finger of the regulator, the arms *h* having extensions and mercury cups arranged beneath the extensions adapted to close local alarm circuits, substantially as described.

No. 30,471. Dynamo Machine. (*Machine dynamique.*)

Charles Heisler, St. Louis, Mo., U. S., 24th December, 1888; 5 years.

Claim.—1st. In a dynamo-electric machine, an armature composed

of insulated sections, and wound coils forming a circuit, of which coils a pair is placed on each section and the coils of the circuit alternate in direction of winding, substantially as described. 2nd. In a dynamo-electric machine, an armature composed of insulated sections and wound with coils forming a circuit, of which coils a pair is placed on each section, and the coils of the circuit alternate in direction of winding, in combination with another similar circuit, the coils of which alternate in position with those of the first circuit, substantially as described. 3rd. In a dynamo machine, a stationary sectional armature, the sections being insulated from each other, and provided with coils, the said coils being arranged in independent series, each series comprising alternate coils, substantially as described. 4th. In a dynamo electric machine, a stationary armature made up of core-segments, and insulated rods between the segments, said rods being fixed in the ring-standards, and supporting the armature, substantially as described. 5th. In a dynamo electric machine, a stationary armature made up of core-segments, each segment consisting of curved pieces of sheet metal, with coils wound thereon, the coils being divided by angular pieces set into the segments but insulated from the metal thereof, the said angular pieces projecting above and below the segments, substantially as described. 6th. In a dynamo-electric machine, a stationary armature made of curved core-segments grooved upon their side adapted to insulating supporting-rods, in combination with flanged blocks curved to conform to the supporting-rods, and adapted to support the wires of the outer coils, substantially as described. 7th. In a dynamo machine, a stationary armature composed of curved core-segments grooved upon their sides adapted to insulating supporting-rods, combined with end lugs having a curved portion adapted to the rods, and an angular portion in connection with the sections of the armature core, substantially as described. 8th. In a dynamo machine, in combination, an exciting generator having a stationary field magnet, the said magnet being provided with projecting bearing and holding lugs on its periphery adapted to corresponding lugs on the frame, whereby the said field magnet is held rigidly in place, substantially as described.

No. 30 472. Spring for Vehicles.

(*Ressort de voiture.*)

Edward Storm, Poughkeepsie, N.Y., U.S., 24th December, 1888; 5 years.

Claim.—1st. A spring composed of, first, a hanger or portion constituting a hanger, second, a portion extending therefrom at an approximate right angle, third, a portion extending farther away from the hanger, or hanger portion, in the direction of the length of the latter, and, fourth, a portion extending back parallel, or approximately parallel, with the portion that extends from the hanger or portion constituting a hanger at an approximate right angle toward the longitudinal line of the hanger or portion constituting a hanger, substantially as specified. 2nd. A spring composed of, first, a hanger or portion constituting a hanger, second, a portion extending therefrom at an approximate right angle, third, a portion extending farther away from the hanger, or hanger portion, in the direction of the length of the latter, fourth, a portion extending back parallel, or approximately parallel, with the portion that extends from the hanger, or portion constituting a hanger, at an approximate right angle toward the longitudinal line of the hanger, or portion constituting a hanger, and, fifth, a terminal portion extending at an angle to the portion last named toward the hanger, or portion constituting a hanger, substantially as specified.

No. 30,473. Bolster Spring. (*Ressort de selle.*)

Edward Cliff, Nyack, N.Y., U.S., 24th December, 1888; 5 years.

Claim.—1st. In combination with the bolster B, stake C, and the bar D arranged over the bolster parallel therewith, and guided on the stake, as shown, the coils a arranged axially vertical at opposite sides of the bolster, and u. ted at the top of the attaching loop l extending lengthwise of the bar D, and secured thereto, and the shanks b, b extending from the base of the coils and resting upon the bolster, and terminated at opposite sides of the stakes, substantially as described and shown.

No. 30,474 Reversible Curved Spring Harrow. (*Dent de herse élastique, cambrée et réversible.*)

J. M. Childs & Co., (assignees of De Wano B. Smith), Utica, N.Y., U.S., 24th December, 1888, 5 years.

Claim.—The combination with a harrow frame, of a spring-curved reversible harrow tooth, substantially as set forth.

No. 30,475. Machine for Soldering Side Seams of Cans. (*Machine à souder les coutures de côté des boîtes métalliques*)

Edwin Norton, (co-inventor with Alfred B. Wilcox), Maywood, and Oliver W. Norton, Chicago, Ill., U. S., 20th December, 1888; 5 years.

Claim.—1st. The combination in a soldering-machine of a continuously moving can-carrier, with a reciprocating inside wiper for wiping the inside of the seam while the can is being moved in the carrier, substantially as specified. 2nd. The combination in a soldering-machine, of a continuously moving can-carrier, with a reciprocating wiper, and a clamp device for holding the can to resist the action of the wiper, substantially as specified. 3rd. The combination of a can-carrier having receptacles to receive the can longitudinally of the direction of movement of the carrier, means for deflecting or inclining the path of the can as it is carried by said carrier, and an inside reciprocating wiper adapted to enter the can, substantially as specified. 4th. In a soldering machine, the combination, with a solder bath, of a can-carrier chain, a track for said carrier, a guideway or track for the can having a deflected portion, and an inside reciprocating wiper entering the can at the deflected portion thereof, substan-

tially as specified. 5th. In a soldering machine, the combination, with a solder-bath, of a continuously moving can-carrier chain, a track for said carrier, a guideway or track for the can having a deflected portion, and an inside reciprocating wiper entering the can at the deflected portion thereof, and mechanism for giving the wiper a quicker motion than that of the can-carrier, substantially as specified. 6th. In a soldering-machine, the combination, with a solder-bath, of a continuously moving can-carrier chain, a track for said carrier, a guideway or track for the can having a deflected portion, and an inside reciprocating wiper entering the can at the deflected portion thereof, and mechanism for giving the wiper a quicker motion than that of the can-carrier, said motion-giving mechanism consisting of a pair of levers operated by the can-carrier, and connected with said wiper, substantially as specified. 7th. The combination, in a soldering machine, of a can-carrier, a movable wiper, a lever projecting in the path of the carrier and connected with said wiper, whereby the wiper is moved bodily along and in contact with the seam of the can to be wiped by the movement of the carrier, substantially as specified. 8th. The combination in a soldering-machine, of a can-carrier, a movable wiper, a pair of operating levers projecting in the path of said carrier, a pivotal link connecting said levers, a cross-head, and a link connecting said cross-head, and pivotal link, substantially as specified. 9th. The combination in a soldering-machine, of a can-carrier, a pivoted and reciprocating wiper D, and a cam or track for guiding the free or wiping end of said wiper, substantially as specified. 10th. The combination in a soldering-machine, of a can carrier, a pivoted and reciprocating wiper D, and a cam or track for guiding the free or wiping end of said wiper, said carrier or track having a raised portion to lift the wiper from the seam as the wiper moves in one direction, and a lower portion to guide the wiper against the seam as it moves in the opposite direction, substantially as specified. 11th. The combination in a soldering-machine of a can-carrier, a pivoted reciprocating wiper D, and a cam or track for guiding the free or wiping end of said wiper, said cam or track having a raised portion to lift the wiper from the seam as the wiper moves in one direction, and a low portion to guide the wiper against the seam as it moves in the opposite direction, said wiper being furnished with a laterally-sliding guide pin or roller, and said cam or track being furnished with an incline at one end for sliding said guide pin from the high to the low track, substantially as specified. 12th. The combination in a soldering-machine, of a can-carrier, a pivoted reciprocating wiper D, and a cam or track for guiding the free or wiping end of said wiper, said cam or track having a raised portion to lift the wiper from the seam, as the wiper moves in one direction, and a low portion to guide the wiper against the seam as it moves in the opposite direction, and a spring to force the wiper against the seam as it moves in the opposite direction, and a spring to force the wiper against the seam, substantially as described. 13th. The combination in a soldering machine, of a continuously-moving can-carrier, a movable wiper, and a pair of wiper-operating levers having short arms projecting in the path of said carrier, and long arms connected with said wiper, whereby the wiper is moved faster than the carrier, substantially as specified. 14th. The combination with a can-carrier chain, of a movable wiper, and a pair of wiper-operating levers, both having arms projecting in the path of said carrier chain near the wiper, and relatively near the link of the chain carrying the can, being operated by the wiper, so that the slack in or rear of the links of the chain will not materially affect the operation of the wiper in its proper order or time, substantially as specified. 15th. The combination with a link-chain can-carrier, of a reciprocating wiper, and device for holding or guiding the can to resist the action of the wiper, substantially as specified. 16th. The combination with a can-carrier, of a movable wiper, and a stationary can-holding or guiding device into or through which the can is carried by the carrier to resist the action of the wiper, substantially as specified. 17th. The combination with a continuously-moving can-carrier, of a reciprocating wiper and a stationary can-holding device through which the can is drawn by the carrier, substantially as specified. 18th. The combination with a link-chain can-carrier of a reciprocating wiper, and a stationary can-holding device having a slot or opening for the can-carrier to pass through, substantially as specified. 19th. The combination, with a can-carrier, of an inside reciprocating wiper, means for inclining or deflecting the path of the can carried by said carrier, and a can-holding device to resist the action of the wiper, substantially as specified. 20th. The combination in a soldering-machine, of a track or guideway along which the can is carried, having a deflected portion with an inside reciprocating wiper entering and reciprocating inside the can, while the same is at such deflected portion of said track or guideway, substantially as specified. 21st. The combination in a soldering machine, of a track or guideway along which the can is carried, having a deflected portion with an inside reciprocating wiper entering and reciprocating inside the can, while the same is at such deflected portion of said track or guideway, and a continuously-moving can-carrier, and means for reciprocating said wiper with a faster motion than that of the carrier, substantially as specified. 22nd. In a side seam soldering-machine, the combination with an acid or fluxing device of a solder-bath, a can-carrier, an outside wiper, and an inside wiper, substantially as specified. 23th. In a side seam soldering machine, the combination, with an acid or flux bath, a solder bath, a track for the cans, a link can carrier, an outside wiper, a guide, hood, or clamp for guiding and holding the cans against such wiper, an inside wiper, and a device for holding the cans while they are wiped upon the inside, substantially as specified. 24th. The combination in a side seam soldering-machine, with a track for the cans, a link-chain can-carrier, a track for said chain, a solder-bath, an outside wiper, a hood for holding or guiding the can against said outside wiper, an inside reciprocating wiper, substantially as specified. 25th. The combination in a side seam soldering-machine, with a solder-bath, of a can-carrier, an inside wiper, and a cooling device, substantially as specified. 27th. The combination in a side seam soldering-machine, with a solder-bath, of a can-carrier, an outside wiper, an inside wiper, and an air-

blowing jet-pipe or nozzle for cooling the seams, substantially as specified. 28th. The combination in a side seam soldering-machine, with an acid or flux bath, a solder-bath, a link-chain car-carrier, a track for the cans, guide-hoods for the can to pass under, an outside wiper, an inside wiper, and a cooling device, substantially as specified.

No. 30,476. Swinging Car truck.

(*Châssis à char oscillant*)

Luther K. Jowett, Boston, Mass., U.S., 24th December, 1888, 5 years.

Claim.—1st. In a car-truck, the arch-bar, truss, wheel-strap and clips B provided with seats combined with arch-bar sustaining blocks A provided with projections, the said sustaining blocks being placed between the arch bar and truss, and with its projections in the seats of the clips, whereby increased rigidity is obtained, substantially as described. 2nd. In a car truck, the arch-bar, truss, wheel-strap and arch-bar sustaining blocks, and saddle provided with a recess, and with grooves, combined with a rocker having a projection to enter the recess of the saddle links b₅, and spring seats, and spring, and bolster, and transom, the grooves in the saddle being adapted to receive the links b₅ whenever it is desired to change the truck from a swinging truck to a so-called "rigid truck," substantially as described. 3rd. In a car-truck, the bolster combined with a centrepiece composed of a base h₁, and a top portion h₂, the base being secured to the bolster, the top being adjustably connected with the base, as and for the purpose described. 4th. In a car-truck, the arch-bar, truss, wheel-strap, and bolster, and transom, combined with means, substantially as described, to take up the slack in the truss, as and for the purpose set forth. 5th. In a car-truck, the arch-bar sustaining block A having a laterally extended wing A₁, combined with a loop or connection A₂, to support a brake-beam, substantially as described. 6th. In a car-truck, an arch-bar, and an arch-bar sustaining block provided with a projection, combined with a support having a seat for the projection on the arch-bar sustaining block, substantially as described.

No. 30,477. Plough, (*Charrue*.)

James Nowbill, Trezevant, Tenn., U.S., 26th December, 1888; 5 years.

Claim.—In a plough, the combination, with the colter E, of the locking block F, the binding yoke G I, and the nuts i, substantially as specified.

No. 30,478. Cooking Stove. (*Poêle de cuisine*.)

Joseph Jacques, Montreal, Que., 20th December, 1888, 5 years.

Claim.—1st. In a cooking stove, the movable and independent broiling grate F, provided with the guides N, N and n, the suspension pieces b, b, the upright pieces a, chains m, pulleys R, shaft S, toothed wheel O, wheel P, double ratchet Q with its pivot L, guide M, and knob e, substantially as described and for the purposes set forth. 2nd. In a cooking stove, the fire box F provided with the grate M composed of the pieces A, A, having the projections H, handles F, and supports G, also the pieces B, B having the projections D, handles C, and supporting pieces n, substantially as described and for the purposes set forth. 3rd. In a cooking stove, the combination of the pastry oven E, broiling grate F with accompanying mechanism, and fire grate M, substantially as described and for the purposes set forth.

No. 30,479. Eaves Gutter of Roof.

(*Bords de toit*.)

John Phelps, Dulwich, Eng., 26th December, 1888, 5 years.

Claim.—1st. An eaves gutter for roofs, constructed of a strip of sheet metal bent to form a gutter proper a, and a sloping cover therefor, substantially as specified. 2nd. The combination with a roof of a combined eaves gutter, and cover therefor, constructed of sheet metal bent to form the gutter proper a, and the sloping cover b, the gutter portion being secured to the eaves along the edge a₁, and the cover portion b overlapping the roof, and secured thereon at its edge b₁ in such manner as to permit of drainage from the roof beneath the part b into the gutter a, substantially as specified.

No. 30,480. Horse Hay Rake.

(*Râteau à cheval*.)

Barney Desautels, Grafton, Dak., U.S., 26th December, 1888, 5 years.

Claim.—In a hay rake, the combination, with the wheels 2, and axle 4, of the tilting frame 6 pivoted upon said axle, the teeth 8 carried by said frame, and moving therewith, and the end plates or guards 10 secured to said frame 6 between the outer rake-teeth and the wheels, and moving with said frame, and teeth, substantially as described.

No. 30,481. Car Brake. (*Frein le char*)

Henry S. Hopper, Detroit, Mich., U.S., 26th December, 1888, 5 years.

Claim.—1st. The automatic momentum brake-mechanism, consisting of the combination, with the draw-bar and brake-lever, of a fly-wheel journalled freely on a sleeve which loosely embraces the axle, an adjacent spool having a chain engaging it with the brake-lever, friction mechanism adapted by the thrust of the draw-bar to engage the sleeve, and a cam on the sleeve, whereby the fly-wheel is shifted into frictional engagement with the spool and its momentum utilized to set the brakes, substantially as described. 2nd. In an automatic brake mechanism, the combination, with the brakes, and a ratchet rod and pawl adapted to hold the brake when set, of a rod connected with the draw bar, and arranged so as to trip the pawl and release the brakes when the car is started, substantially as described. 3rd. On a freight car, the combination, with the automatic momen-

tum mechanism for setting the brakes, and a ratchet rod and pawl for holding them, of means for holding the pawl disengaged when desired, substantially as described. 4th. In an automatic momentum brake, the combination, with the spool, the fly-wheel, and sleeve provided with engaging cam faces g₁, of brake shoes adapted to engage the sleeve and retard its motion, the construction being such that by the onward movement of the fly-wheel the cams will shift the wheel into frictional engagement with the spool, substantially as described. 5th. In an automatic momentum brake, the combination, with the fly-wheel, the sleeve provided with engaging cam faces g₁, the shoes adapted to retard the motion of the sleeve, and the spool adapted when revolved to set the brakes, of a supporting arm I adapted to give the spool a slight lateral pressure against the fly-wheel, substantially as described. 6th. In an automatic momentum brake, the combination, with the spool, the fly-wheel, the sleeve provided with cam faces g₁, and the shoes adapted to retard the motion of the sleeve, of a lever or levers adapted to support the shoes adjacent to the sleeve, substantially as described. 7th. In an automatic momentum brake, the combination, with the spool, the fly-wheel, the sleeve provided with cam faces g₁, the shoes adapted to retard the motion of the sleeve, and the supporting lever, K, K₁, of a supporting link k₁, and a connecting spring k₂ adapted to give the levers a simultaneous lateral motion, substantially as described. 8th. In an automatic momentum brake, the combination, with the friction shoes and their supports, of the rod L₁ extending to the opposite end of the car, and in connection therewith, the draw-bar C₁, and lever M₁, whereby a thrust upon this draw bar will operate to set the brakes, substantially as described. 9th. In an automatic momentum brake, the combination, with the brake mechanism, and rod L₁ of the lever M₁, and frail chain N₁, the said lever and rod limited at m by an engagement adapted to readily separate when the chain is strained, substantially as described. 10th. In an automatic momentum brake, the combination, with the friction shoes, their supports, and the pawl and ratchet, of the rod L₁ extending to the opposite end of the car, and in connection therewith, the draw-bar C₁, and lever M₁, whereby a thrust on this draw-bar will set and hold the brakes, and a draft upon it will trip the pawl and release the brakes, substantially as described.

No. 30,482. Wheel Harrow and Cultivator.

(*Herse et cultivateur à roues*.)

Joseph Vowles, Milford, Mich., U.S., 26th December, 1888; 5 years.

Claim.—1st. The combination of the arch C, cultivator frames connected at their forward ends to said arch by hinge and swivel joints, the axle B, the arched lever I having its extremities hinged directly to the axle, and constructed with horizontal arms i₁, and mechanism supporting the rear ends of said frames upon said arms of the lever, by which the operator may at will cause the rear of the frames to travel laterally on said arms, substantially as described. 2nd. In a riding cultivator, the combination with the arch C, of cultivator frames connected therewith by hinge and swivel joints, an arched lever I having lateral horizontal arms i₁, and jointed at its extremities directly to the axle, mechanism supporting the rear of said frames upon said lateral arms, by which the operator may at will cause said rear ends of the frame to travel laterally upon said arms, and in connection therewith, mechanism for holding the arched lever in any desired position, for controlling the vertical position of the rear ends of the frames, substantially as described. 3rd. In a riding cultivator the combination, of the arch C, cultivator frames connected therewith by hinge and swivel joints, an arched lever I having lateral horizontal arms i₁, and curved at its extremities at right angles to said arms, said lever extending over in front of the driver's seat, and jointed at its extremities directly to the axle, the rear ends of said frames supported upon the arm i₁ of said lever by a stirrup, a roller by which the operator may vibrate the rear ends of said frames laterally at will, and in addition thereto mechanism for holding said lever in any given position to control the vertical movement of said frames, substantially as described. 4th. The combination of the hound E, the tongue F, the arch C, the axle B, the arched lever I provided with lateral arms i₁, and jointed at its extremities directly to the axle, cultivator frames connected with the extremities of the arch C by a joint permitting the rear ends of said frames to rise and fall and swing laterally, the rear of said frames supported upon the lateral arms of the arched lever by mechanism enabling the operator at will to cause the rear ends of said frames to swing laterally, ratchet mechanism connected with the tongue, and the arched lever to hold said lever in any desired position, and in connection therewith, means for tilting the tongue to any desired angle, substantially as described. 5th. The combination, of the hounds E, the tongue F, the arch C, the axle B, the cultivator frames having their forward ends swivelled to the arch, the arched lever I having its extremities hinged directly to the axle, the braces C₁ connecting the lower ends of the arched bar C with the axle, and braces C₂ connecting the lower ends of the arch C with the forward ends of the hounds, substantially as and for the purposes described. 6th. The combination with the frame, the axle B, the arch C, the toothed frames swivelled to the arch, and the tongue having a ratchet bar, of the arched lever I having its extremities jointed directly to the axle, a sliding bar connected with the lever, and adapted to slide on said ratchet bar m, and means for engaging said sliding bar with the ratchet bar, substantially as described. 7th. The combination with the arch C, and axle B, of the arched lever I having lateral arms i₁, and jointed at its extremities directly into the axle, the stirrups J suspended from, and adapted to travel to and fro on, said arms, and toothed frames H swivelled to the parts i₁ of the arched bar, and connected with the said stirrups, substantially as described. 8th. The combination, with a tooth carrying beam, of a shoe H₂ secured thereto, and two spring teeth attached to the shoe, substantially as described. 9th. The combination, with the frames H, of the bar H₂, and block H₃, the former carrying two teeth, and the latter carrying one tooth, said bar and block made removable, substantially as described. 10th. In a wheel cultivator or harrow the combination, with its axle, of the adjustable collar L for determining the gauge between the wheels, said collar made in the form of a split sleeve, with a clamping screw, whereby said sleeve is contracted and set upon the axle, substantially as and for the purposes described.

No. 30,483. Fireproofing Compound.*(Composition incombustible.)*

Charles M. Coon, Washington, D.C. (assignee of Byron F. McIntyre, East Orange, N.J.). U.S., 26th December, 1878; 5 years.

Claim.—1st. A composition of mat. or for fireproofing purposes, consisting of sulphuricinate of ammonia mixed with ammoniated and carbonated salts, as and for the purpose specified. 2nd. A composition of matter for fireproofing purposes, consisting of sulphuricinate of ammonia borax, and chloride of ammonia. 3rd. A composition of matter for fireproofing purposes, consisting of sulphuricinate of ammonia, carbonate of ammonia, soluble cream tartar, acetate of soda, and hydrochloride of ammonia, as and for the purpose specified 4th. A composition of matter for fireproofing purposes, consisting of sulphuricinate of ammonia, borax, chloride of ammonia, alum, tungstate of soda, and silicate of soda. 5th. A fireproofing compound or preparation containing sulphuricinate of ammonia, as a vehicle and binding agent for the fireproofing ingredients.

No. 30,484. Washing Machine.*(Machine à blanchir.)*

Jeremiah Cory and Hiram J. Johnson, Melvern, Kan., U.S., 26th December, 1888; 5 years.

Claim.—1st. A washing machine provided with removable journal bearings, having downward converging sides and recesses conforming to the configuration of the removable bearings, said bearings being adapted to receive the ends of the beaters, substantially as and for the purpose specified. 2nd. The combination, with a washing machine provided with removable bearings having converging sides adapted to receive the ends of the beaters, and recesses conforming to the configuration of the removable bearings, of a hinged cover having springs projecting from the sides thereof, and designed to lie across the removable bearings when the cover is closed, substantially as described.

No. 30,485. Apparatus for Raising Cream from Milk and for Skimming.*(Appareil pour faire monter la crème du lait et pour écumer.)*

William H. Wells, Evershot, Eng., 26th December, 1888; 5 years.

Claim.—1st. Forming vessels in which milk is to be set, to effect the raising of cream, with a shallow cream reservoir, or receptacle, at the top, and with the part below this receptacle comparatively deep, and formed or divided into narrow cells or spaces opening into such cream receptacle, substantially as described. 2nd. Forming vessels in which milk is to be set to effect the raising of cream, with a shallow cream reservoir, or receptacle, at the top, and with the space below this receptacle comparatively deep and formed or divided into narrow cells which externally are surrounded by air, or can be both warmed and cooled other surrounding fluid. 3rd. Curving outwards, the top of one or both sides of a vessel in which skimming is to be performed, so as to allow a curved skimmer to be readily inserted, substantially as described.

No. 30,486. Process for Rendering Milk Consistent without any Chemical Alteration of the Same.*(Procédé pour rendre le lait solide sans altération chimique quelconque.)*

Andreas C. Dronckhan, Stendorf near Schönwalde, Germany, 26th December, 1888; 5 years.

Claim.—1st. The process for simultaneously obtaining all the dryable component parts of cow, and other milk, in a solid form without any chemical alteration of the same, consisting in adding syrup, sugar, glucose, or other suitable material, to milk from which the cream has been once removed, and before reducing the said milk to about one-fifth of its volume, then removing the remaining moisture from the milk in a vessel surrounded by hot water, which said vessel is in connection with an appropriate vacuum apparatus, or exhauster, and with a tube, or pipe, which feeds warm dry air into the said vessel in which the milk is kept in continuous motion by means of a suitable stirring device, so that the warm air sucked or drawn through the milk by the force of the vacuum apparatus, or exhauster, will become saturated with moisture, and thus produce a drying or solidifying of the milk, which can be pressed into forms and, if desired, be provided with a protective coating of appropriate material, substantially as set forth. 2nd. The process, substantially as hereinbefore described, for rendering milk consistent without chemically altering the same.

No. 30,487. Washing Machine.*(Machine à blanchir.)*

Frederic A. Surhurior dit Lallemand and Arthur Gravel, Montreal, Que., 26th December, 1888; 5 years.

Claim.—1st. In a washing machine, the lower L, toothed sector K, geared wheel O, connecting rod R, board Q, springs S, rollers T, piece a, spring f, catch b, piece d, support g, pieces F, H and J, also standards N, all arranged substantially as described and for the purposes set forth. 2nd. The combination of the pieces F, F, and accompanying mechanism, with the piece A, substantially as described and for the purposes set forth.

No. 30,488. Air Injector for Furnaces.*(Injecteur d'air pour fourneaux.)*

William S. Hutchinson, Chicago, Ill., U.S., 27th December, 1888; 5 years.

Claim.—1st. A steam-nozzle for an air-injector provided with a tip having an interior shoulder, in combination with a T, continuous

therewith. 2nd. An air-globe for an air-injector, provided with a sound-dampening cushion about the mouth of the air-supply pipe. 3rd. An air-globe provided with an air-pipe, and a sound-dampening cushion about the mouth thereof, in combination with a steam-nozzle which discharges through the air-pipe. 4th. An air-globe having side apertures, an air-pipe, and a sound-dampening cushion about the mouth of the latter, in combination with a nozzle which is screw-threaded into one end of such globe and passes through the same and discharges into the air-pipe. 5th. The combination, with a steam boiler and furnace, of a steam-pipe leading from the steam-dome, a series of air-injectors at the front and rear of the furnace discharging above and below the grate-bars, and a steam-jet toward the forward part of the boiler, and immediately below the smoke-stack, all of the said air and steam injectors being supplied with a constant current of steam from the said steam-pipe, for the purpose of supplying the air to the fire, causing the hot gases to be turned before they leave the furnace, and preserving a constant draft through the smoke-stack.

No. 30,489. Photograph Exhibitor.*(Montre de photographies.)*

Hypolite Boussemare, Lake View, Ill., U.S., 27th December, 1888; 5 years.

Claim.—1st. In a photograph album or picture exhibitor, the combination, with a case A, of leaves B supported within the case, and having rigid lateral projections α , links q , pivotally connecting the leaves together in endless series at their projections α , and affording double-jointed connections between such adjacent pair of the leaves, teeth r extending from the leaves, and rotary sprocket wheels n supported to mesh with the teeth r , substantially as described. 2nd. In a photograph album or picture exhibitor, the combination, with the case A, of leaves B supported within the case, and having rigid lateral projections α , links q pivotally connecting the leaves together in endless series at their projections α , and affording double-jointed connections between each adjacent pair of the leaves, rods r having ends which afford teeth r extending beyond the ends of the leaves, and rotary sprocket-wheels n supported to mesh with the teeth r extending beyond the ends of the leaves, and rotary sprocket-wheels n supported to mesh with the teeth r , substantially as described. 3rd. In a photograph album or picture exhibitor, the combination, with a case A, of leaves B supported within the case, provided at their edges t , with stops s , having flanged extremities α affording bearings for rods r , links q pivotally connected with the adjacent rods, having bearings in the extremities of contiguous strips, and affording double-jointed connections between each adjacent pair of leaves, and shafts o carrying sprocket-wheels n to engage the teeth at opposite extremities of the endless series of leaves, and a suitable handle on one of the shafts o , at which to turn the leaves, substantially as described. 4th. In a photograph album or picture exhibitor, the combination, with a case A, of leaves B supported within the case, provided at their edges t with stops s , having flanged extremities α , affording bearings for rods r , which project beyond said extremities and form teeth r , links q pivotally connecting adjacent rods having bearings in the extremities of contiguous strips s , and affording double-jointed connections between each adjacent pair of leaves, shafts o carrying sprocket-wheels n , to engage the teeth r at opposite extremities of the endless series of leaves, and a suitable handle on one of the shafts o at which to turn the leaves, substantially as described. 5th. In combination, a case A containing an endless rotary series of flexibly connected picture frames, a lid A_1 , and arms, each pivoted at one end to an inner side of the case back of the centre thereof, and of a length to extend from its pivotal point inside the case toward the front side thereof, and over the edge of the rear side, and pivotally connected with the lid near its forward edge, substantially as described. 6th. In a picture-exhibitor, the combination, with a case A, of leaves B affording each a multiple frame having lateral projections α toward their opposite extremities, links q pivotally connecting the projections α , of contiguous leaves, and thereby forming double-jointed connections between the leaves in endless chains, comprising the links and projections, and sprocket-wheels, and toothed mechanism for actuating the endless chains, substantially as described. 7th. In a picture-exhibitor, the combination, with a case A, of leaves B affording each a multiple frame having lateral projections α toward their opposite extremities, and intermediate lateral projections, links q pivotally connecting the projections of contiguous leaves, and thereby forming double-jointed connections between them in endless chains, comprising the said links and projections, and sprocket-wheel, and tooth mechanism for actuating the endless chains, substantially as described. 8th. In a picture-exhibitor, the combination, with the case, of leaves B, supported within the case, and flexibly connected together in endless rotary series, and partitions i dividing the leaves into separate compartments k , having openings in their edges for the insertion of pictures, substantially as described. 9th. In a picture-exhibitor, the combination, with the case, of leaves B provided on their inner edges with teeth h , partitions i dividing the leaves into separate compartments k , having openings in their edges for the insertion of pictures, endless chains connecting the leaves at their inner edges, and rotary shafts supported in the case at opposite ends of the endless chains, and carrying sprocket-wheels engaging with the teeth, substantially as described.

No. 30,490. Adjustable Chair, Step-Ladder and Hand-Truck.*(Chaise, marchepied et charriot à bras combinés.)*

Anthony W. Burke, Toronto, Ont., 27th December, 1888; 5 years.

Claim.—1st. The combination, in an adjustable chair having a hinged seat at d , with auxiliary legs e divided at the line e' , the cross-pieces e , e and L , the spring bar H pivoted to the cross-piece at I , the opposite end of which is provided with a double hook, one of which enters the depressions at J thus securing the dividing joint e , substantially as and for the purpose specified. 2nd. In an adjustable step-ladder, the chief elements of which are the front sides e , e , and the hind parts A , A , with cross-pieces forming steps e e and L , the

cross-pieces D, D, hinged together *d*, in combination with the spring bar H, pivoted underneath the lower step *e* at, or in proximity to, the position of I, and the cross-bar K which the hooks *s* engages with, thus securing the several parts rigidly together, substantially as and for the purpose specified. 3rd. The combination, in a hand-truck, of the lower sides *c, c*, arranged and devised with cross-pieces *e, e*, D D, and L, to connect *e, e* same to the upper parts A, and hinged at *d*, of of the *h* division line et, the spring bar H pivoted at I, and hooked into the bar K, with the two floor wheels *m*, pivoted to the sides A, A, and the braces *cc, cc*, substantially as and for the purpose specified. 5th. The combination, in an adjustable chair, of the several parts arranged and devised substantially as shown, with an upholstered back at *o*, and a cushion *p* provided for the seat D and secured thereto at the front and rear, substantially as and for the purpose specified.

No. 30,491. Steam Washing Machine.

(*Machine à blanchir à la vapeur.*)

Peter J. Taeger, Ottawa, Ont., 27th December, 1888; 5 years.

Claim.—1st. The distributing chamber F having apertures G G and I I, as and for the purpose hereinbefore set forth. 2nd. The mouth-piece B provided with water way *C, C*, as and for the purpose hereinbefore set forth. 3rd. The combination of boiler A, mouth-piece B, distributing chamber F, with apertures G G and I I, substantially as and for the purpose hereinbefore set forth.

No. 30,492. Floor Stone. (*Dalle de plancher.*)

Joe B. Stringer, Todmorden, Ont., 27th December, 1888; 5 years.

Claim.—The combination, of the iron flange A, with iron hooks or studs B, and the concrete or cement C, substantially as and for the purpose hereinbefore set forth.

No. 30,493. Method of and Apparatus for Supplying Salt to Cattle, Horses, etc. (*Mode et appareil de service du sel aux bestiaux, chevaux, etc.*)

Timothy V. Riordan, Clapham Road, Eng., 27th December, 1888; 5 years.

Claim.—1st. In apparatus for supplying salt to cattle, horses and other animals, the bracket C with notches *p, p* hood H, and hook *h*, Fig. 1, in combination with a roller or cylinder of salt compressed by hydraulic machinery, and provided with a wire axis or shaft A, or with a tube designed to receive the same substantially as and for the purpose specified. 2nd. In apparatus for supplying salt to cattle, horses and other animals, the bracket C, with hood H, notch *p*, and bolt *b*, in combination, with a roller or cylinder of salt compressed by hydraulic machinery, and provided with a wire axis or shaft A, or with a tube designed to receive the same, substantially as and for the purpose described.

No. 30,494. Horse Boot. (*Botte de cheval.*)

Peter J. Schild, Frank L. Schild and Charlie C. Schild, Ionia, Mich., U.S., 27th December, 1888; 5 years

Claim.—1st. A foot covering for horses, comprising a casing A, a lining C, stitches of wire *c*, and strap H, as specified. 2nd. A foot covering for horses, comprising a metallic casing A, a sponge lining C, a pad E, and strap H, as specified. 3rd. In a foot covering for horses, the combination, with the metal casing A, the wire B, the loops *b*, sponge lining C, and the straps H, I, and buckle *x*, substantially as specified. 4th. In a foot covering for horses, the combination, with the metal casing A, the sponge lining C, and the supporting loop D, of the pad E supported by the loop D, substantially as specified. 5th. In a foot covering for horses, the combination, of the metal casing A, the sponge lining C thereon, the sponge-lined pad E, and the metal plate *o*, substantially as specified.

No. 30,495. Device for Removing Sediment from Boilers. (*Appareil pour enlever les dépôts dans les chaudières*)

Cornelius Kehn, Elba, Mich., U.S., 27th December, 1888; 5 years.

Claim.—The herein described means for removing sediment from generators, consisting of the perforated tube, or tubes, placed in proximity to the bottom of the water space of the generator, or other places where the sediment collects in combination with the blow-off pipe provided with a valve under the control of the operator, substantially as described.

No. 30,496. Needle Threader. (*Passe-fil.*)

James M. Miller, Richmond, Va., U.S., 27th December, 1888; 5 years.

Claim.—1st. The improved needle-threader whose body consists of a doubled piece of spring wire, one of its parallel arms having a thread-hook attached, and the other having a coil arranged transversely, forming a guide loop for the needle arm, substantially as specified. 2nd. The improved needle-threader whose body is formed of a spring wire, one of its parallel arms being coiled upon itself, thus forming a transverse guide loop for the needle arm, and its extremity being bent laterally in the same plane with the body of the device, thus forming a needle guide and hook protector, substantially as shown and described. 3rd. In a needle-threader, the combination, with the spring arm 2 having a bend *s* at its extremity, of a second spring arm 1 having a thread hook which projects outward therefrom and passes through the said bend, the tension of the spring tending to hold the hook projected through the bend, and in position to engage a thread laid upon said bend, and when overcome by pressure applied to the spring arms, the hook is drawn backwards through the said bend, as specified. 4th. In a needle-threader, the combination with the spring arm 1, and its hook, of the spring arm 2 having its extremity bent as

shown, thereby forming a goose-neck having parallel sides, and provided with an aperture at the middle of the curve, and with a shoulder for defining the position of the thread, as specified. 5th. A needle-threader whose body is constructed of a double spring wire, and whose parallel portions 1, 2, having opposite bends *s* serving as finger rests, substantially as specified.

No. 30,497. Vehicle Spring. (*Ressort de voiture.*)

Albert Clark, Lansing, Mich., U.S., 27th December, 1888; 5 years.

Claim.—1st. The combination, with the front and rear axles, and the bolsters thereon, of the body or buck-board of less length than the distance between said bolsters, the volute springs secured at one end directly to said body or buck-board near the ends thereof, and the other ends passed under the bolsters and turned upward in front of the front board, and in rear of the rear board of said body, and with the eyes thereof supported on top of said bolsters, substantially as and for the purpose specified. 2nd. The combination, with the front and rear bolsters, the body or buck-board B of less length than the distance between said bolsters, and arranged between said bolsters, of the volute springs A secured directly to the front and rear corners of the body, in the longitudinal direction thereof, and passed under said bolsters, of clips consisting of the ear and plates *b* secured to the eye of the spring *c*, *c*, of the bolster, and the clip bolts *d*, the parts being arranged and constructed substantially as and for the purpose described, whereat *e* body has a free vertical play between the bolsters, as set forth.

No. 30,498. Apparatus for Heating Water.

(*Appareil pour réchauffer l'eau.*)

Martin H. Clifford, North Haverhill, N.H., U.S., 27th December, 1888; 5 years.

Claim.—In an apparatus to heat water for stock, the combination of the vertical casing A having the hood *a*, the longitudinal casing B opening into the side of the casing A, and composed of the lower and upper sections C, D, respectively, the sliding gate E, the flue F open at its outer end, closed at its inner end, and gradually decreasing in transverse area from the former to the latter, and the vertical chimney G, rising from the roof of the section D, and opening into the flue F, substantially as described.

No. 30,499. Attachment for Doubletrees and Whiffletrees. (*Disposition aux volées de derrière et aux palonniers.*)

John S. Shuck and George C. Bateman, Holton, Kan., U.S., 27th December, 1888; 5 years.

Claim.—1st. In draft equalizing stays, a segmental swivel A combined with, and rotating on a grooved pulley, adjustably pivoted on the pole or tongue of a vehicle, rearwardly of the orner or doubletree, substantially as set forth. 2nd. The segmental swivel A, adjustably combined with the stay rods, and combined with, and rotating on a pulley, adjustably pivoted on the tongue or pole of a vehicle substantially as described. 3rd. The ratchet plates in combination with the clip, as and for the purpose specified. 4th. The clovis with hollow tapped stem or sleeve, in combination with the stay rods, substantially as herein set forth. 5th. The combination of the clip, having the grooved pulley and its studded disk, and wedge-shaped washer, the swivel, the adjustable stay rods, and the doubletree, substantially as herein set forth.

No. 30,500. Window Fastening.

(*Arrête-croisée.*)

William Driscoll, Brockville, and James H. Connor, Ottawa, Ont., 27th December, 1888; 5 years.

Claim.—1st. In a sash-lock and holder, the hanging button A, C, having locking device *t*, and holding piece *z*, substantially as and for the purpose hereinbefore set forth. 2nd. In a sash-lock and holder, the adjuster E, F, provided with pinching screw N N, and adjusting pin K, substantially as and for the purpose hereinbefore set forth. 3rd. The combination, in a sash-lock and holder, of the button A, C, having locking device *t*, and holding piece *z*, with the adjuster E, F, as shown and described, as and for the purposes hereinbefore set forth.

No. 30,501. Machine for Cutting Wrappers for Cigars, etc. (*Machine pour tailler les robes des cigares, etc.*)

The Universal Cigar Rolling Machine Company, Jersey, N.J., (assignee of Oscar Hammerstein, New York, N.Y.), U.S., 27th December, 1888; 5 years.

Claim.—1st. The combination, with a cutting die, of the roller E that bears upon the cutting edge of the die at an obtuse angle, substantially as described. 2nd. The cutting die A combined with the roller E, that bears upon the cutting edge of the die at an obtuse angle, spindle *a* carrying the roller E, and spring-actuated crank *f* for pressing the roller E upon the die, substantially as described. 3rd. The cutting die A combined with the roller E, spindle *a* carrying said roller, spring-actuated crank *f*, and plate *g* for regulating the movement of the crank *f*, substantially as described. 4th. The combination of the cutting die A, with the inclined rollers E, E, that bear upon opposite sides of said die, spindles *a, a*, that carry said rollers, and means, substantially as described, for pressing the rollers upon the die and for regulating such pressure, as specified. 5th. The combination of the cutting die A, that is guided on the base B, bracket F that extends over said die, shaft *b*, spindle *a* carried there by, roller E carried by said spindle, spring-actuated crank *f*, and adjusting plates, substantially as herein shown and described.

No. 30,502. Telegraphic Method and Means of Operating with Electrical Conductors. (*Méthode de télégraphie et moyens d'opérer avec des conducteurs électriques.*)

The International Electric Company. (assignee of John E. Watson), Louisville, Ky., U.S., 27th December, 1888, 5 years.

Claim.—1st. The method or process of telegraphy or electric signaling, which consists in, first, bringing to a position of equilibrium a mechanically counterpoised armature of an electromagnet involving a constantly-acting direct local current, and a second reversely-acting current in the main line, passing in coils of low and high resistance respectively on a common soft iron core, and, secondly, operating said armature by said local current for its attraction, and by a tension exterior to the circuits, but conditioned upon the action of the main line current for its retraction, substantially as specified.

2nd. A system of electric signaling, consisting of a local circuit including a magnet with low-resistance coils, and an armature poised by the attraction of the magnet, and an opposed tension, and a main line circuit including high-resistance coils superposed on the core of the aforesaid magnet, and passing the current reversely to that in the local coils, whereby a current in the main line, too weak to cause an attraction of the aforesaid armature, will lessen the attraction of the magnet in said local circuit and thus cause the tensile force to preponderate, substantially as specified.

3rd. In a system of electric signaling, the method of producing motion of the armature of an electromagnet, counterpoised at a distance from its poles between the electro-magnetic attraction set up by the coils of low resistance on the core of said electromagnet on the one hand, and the tension of the armature on the other hand, by passing a weak main line current through high resistance coils on the same core, in the reverse direction to that of the current passing in the coils of low resistance, to lessen the magnetic attraction in response to action in the main line, and ceasing the action of said line, to allow the electromagnet to regain its maximum power of attraction, substantially as specified.

4th. In an electro-magnetic relay, the combination, with a magnet involving a constantly-acting direct current in local circuit, and a second reversely-acting current in the main line passing respectively in coils of low and high resistance on a common soft iron core, of a poised armature in the indicator-circuit, and its tension opposing the attractive power of the magnet to effect the counterpoise of said armature, whereby a current in the main line, too weak to cause attraction of the armature, will lessen the attraction of the magnet in the local circuit and cause the tensile force to preponderate to retract the armature to close the indicator-circuit, substantially as specified.

5th. A relay electromagnet having an armature counterpoised by its tension opposing the electro-magnetic attraction, and having on its core coils of low-resistance involved in a constantly-closed direct local circuit energizing the same, and coils of high resistance separate and insulated from the low-resistance coils energized by a main current, acting in the reverse direction in said coils, to lessen the magnetizing effect of the low-resistance coils and allow the tensile force to preponderate and to attract the armature, substantially as specified.

6th. An electro-magnetic relay having a coil of low resistance on the same core with its main line helix, and included in a constantly-closed local voltage circuit passing its current in the opposite direction to that of the main voltage current in the main line, helix to set up therein induced currents opposite in direction to the extra or otherwise induced currents of said main line to neutralize the same, substantially as specified.

7th. A relay having an armature, an electromagnet wound with coils relatively of high and low resistance on a soft-iron core, and oppositely connected in the main line, and a constantly-closed local circuit, and adjusting devices to regulate the distance of the diaphragm or armature from the poles of the electromagnet, in combination with a key in and forming part of the main circuit, substantially as specified.

No. 30,503. Street Sprinkler. (*Arrosoir de rue.*)

John W. Lischer and George G. Campbell, Syracuse, N.Y., U.S., 27th December, 1888, 5 years.

Claim.—The combination, with the tank A, and the pipes leading to the distributing pipes, of the valves e, et, the three-armed levers pivoted on top of the tank, the chains a, connecting the valves with the three-armed levers, the angle levers f, u, the chains e connecting the angle-levers to the chains a, and the operating levers p and r connected to the respective angle-levers, whereby the valves may be operated separately or conjointly to direct the water to the various compartments of the distributor, substantially as specified.

No. 30,504. Cow Stable Cleaner.

(*Nettoyeur Fétable à vaches.*)

Farquhar McRae, Roxborough, Ont., 27th December, 1888, 5 years.

Claim.—1st. A cow-stable cleaner, substantially as hereinbefore set forth and described, and consisting of a sliding platform, and an operating mechanism. 2nd. The combination of the lever A having the fulcrum C, with the sliding platform B having the connecting rods H, I, and pivot Q, substantially as and for the purpose hereinbefore set forth. 3rd. In a cow stable cleaner, the combination with the lever A, and sliding platform B, of the scraper E, F, and the movable plank D, I, substantially as and for the purpose hereinbefore set forth.

No. 30,505. Portable Extension Ladder.

(*Echelle à rallonge portative.*)

Siméon Piché, Duluth, Minn., U.S., 31st December, 1888, 5 years.

Claim.—1st. The combination, with a fixed frame, horizontal levers pivoted upon said frame, sliding opposing vertical racks attached to said levers, and means, substantially as described, for manipulating said racks, of a series of lazy-tongs attached to said racks, consisting of a series of pivoted frames provided near the forward end with a

transverse round and diagonal brace-bars at the rear ends, said brace-bars constituting centro and rear pivots, as and for the purpose specified. 2nd. The combination, with a fixed frame, horizontal levers pivoted upon said frame, sliding opposing vertical racks attached to said levers, and means, substantially as described, for manipulating said racks, of a series of lazy-tongs attached to said racks, consisting of a series of pivoted frames provided near the forward end with a transverse round diagonal brace-bar at the rear ends, said brace-bars constituting centro and rear pivots, a detachable platform supported upon the top rounds of the ladder, and wheel-carrying legs projected from the lower sector of the lazy-tongs, all combined to operate substantially as and for the purpose specified. 3rd. The combination, with a fixed frame, horizontal arms projected from said frame, provided with a retaining screw, horizontal levers pivoted to said frame, an aperture bracket attached to the fixed frame, adapted to receive the free ends of the levers, vertical spaced standards secured at each side of the centro of the said lever, racks sliding upon the opposing faces of said standards, and means, substantially as shown and described, for manipulating said racks, of a series of lazy-tongs attached to the sliding racks consisting of a series of pivoted frames having a round secured in their forward ends, and diagonal brace bars constituting the central and rear end, pivots for the said frames, and a series of wheel-carrying legs secured to the lower section of the lower set of the lazy-tongs, substantially as and for the purpose specified. 4th. The combination, with a fixed frame, horizontal arms projected from said frame provided with a retaining screw, horizontal levers pivoted to said frame, an aperture bracket attached to the fixed frame adapted to receive the free end of the levers, vertical spaced standards secured at each side of the centro of the said lever, racks sliding upon the opposing faces of said standards, a transverse shaft journaled in the horizontal lever, pinions carried by said shaft engaging the racks, and a ratchet wheel, and pawl connected with said shaft, of a series of lazy-tongs attached to the sliding racks consisting of a series of pivoted frames having a round in their forward ends, and diagonal brace-bars in their rear ends, which brace-bars constitute the central and rear pivots of the frame, a detachable platform supported upon the upper rounds, and guide-rods passing through the front and rear ends of the lower section of the lazy-tongs, which guide-rods slide laterally in the horizontal levers, substantially as and for the purpose specified. 5th. The combination, with a fixed frame, horizontal levers pivoted to said frame, and vertically-sliding racks attached to said levers, of a lazy-tongs carried by said levers, and attached to said racks, substantially as shown and described. 6th. An extensible ladder, consisting of lazy-tongs made up of frames having a round in the forward end, and each alternate frame provided with diagonal brace-bars, which constitute the central and rear pivots of the lazy-tongs, substantially as shown and described.

No. 30,506. Knock Down Box and Blank Thereof. (*Boîte et ébouche de boîte pliante.*)

Nancy J. Dobbins, Denver, Col., U.S., 31st December, 1888, 5 years.

Claim.—1st. A blank for a knock down box, consisting of the base 1, extensions 2, 3, 4, for forming the sides, and cover extensions 7, 8, 11, 12, for forming the ends, and extensions 15, 16, 17, 18 for forming a looped handle, substantially as set forth. 2nd. A blank for a knock down box, consisting of a base 1, side and end extensions, as shown, and prolonged extensions 15, 17, attached to the base and having, the one a tongue 19, and the other a slot 20, for forming a single loop handle to the box. 3rd. The knock down box herein described, consisting of the base, the sides attached thereto, the ends and cover attached to the sides, and handle extensions attached to the base and forming a single loop handle for the box, substantially as set forth.

No. 30,507. Hernia Truss. (*Bandage herniaire.*)

Charles Clutho, Toronto, Ont., 31st December, 1888, 5 years.

Claim.—1st. A spindle A, connected to the centro of the spiral spring C, in combination with a socket E connected to the spiral spring C, at the end opposite to the end at which the socket E is connected, substantially as and for the purposes specified. 2nd. A spindle A, connected to the centro of the spiral spring C, and having a head A formed on it, in combination with a socket E connected to the spiral spring C, at the end opposite to the end at which the socket E is connected, and having a cap b, substantially as and for the purpose specified. 3rd. A spindle A, adjustably connected to the centro of the spiral spring C, in combination with a socket E connected to the spiral spring C, at the end opposite to that at which the spindle A is connected, substantially as and for the purpose specified.

No. 30,508. Surgical Table.

(*Table de chirurgien.*)

Byron H. Daggott, Buffalo, N.Y., U.S., 31st December, 1888, 5 years.

Claim.—1st. In a table of the kind described, the combination, with the table legs, of a shelf connected therewith and a platform adjustable from the shelf, the said platform, when extended, having its fulcrum of support at a point entirely within the space bounded by the table legs, whereby the patient may step upon the platform in mounting the table, without disturbing its equilibrium. 2nd. In a table of the kind described, the combination, with the table legs, of a frame located entirely within the space bounded by said legs and connected at its corners thereto, a shelf sustained by said frame and having a hollow interior and a platform adjustable from the shelf, substantially as described. 3rd. In a table of the kind described, the combination, with the frame-work and top, of a universal joint connecting the two at one corner, and props for retaining the top in tilted adjustment, substantially as set forth. 4th. In a table of the kind described, the combination, with the frame-work and top, of an end prop and a side-prop intermediately between the said top and frame, and springs for throwing said props into operative position when the top is raised, substantially as set forth. 5th. In a table of

the kind described, the combination, with the frame-work and top, of a universal joint connecting the two at one corner, and a stop-guide for limiting the movement of the top, substantially as described. 6th. In a table of the kind described, the combination, with the frame-work, of the top containing sliding leaves and stirrups located side by side with their edges in sliding contact, whereby the said leaves and stirrups may be drawn out, together to form a broad support on the stirrups alone drawn out, substantially as described. 7th. In a table of the kind described, the combination, with the frame-work, of the top having the interior receptacle containing the oppositely sliding leaves detailed with respect to each other, substantially as set forth. 8th. In a table of the kind described, the combination, with the frame-work, of the top connected therewith by a universal joint, a drop-prop connected with the top, and an upwardly swinging leaf connected with the frame, the said leaves being located in planes substantially parallel to the ends and sides of the frame work, substantially as set forth. 9th. In a table of the kind described, a retaining frame removably attached to the top edges of the table, and consisting of a head-board, knee-guide and ankle-rest, substantially as described. 10th. In a table of the kind described, the combination, with the top, of an ankle-rest hinged at one corner of said top, the inner end of said ankle-rest, when in operative position, abutting against the end of the top, substantially as described. 11th. In a table of the kind described, a retaining frame removably attached to the top edges of the table, and consisting of a head-board, a side-board hinged to said head-board, and an ankle-rest hinged to the end of said side-board, substantially as described. 12th. In a table of the kind described, the removable retaining frame, consisting of a head-board, knee guide and ankle-rest hinged together, the head-board and knee-guide having retaining catches, and the ankle-rest having a locking recess, in combination with the stirrup engaging within said locking recess, substantially as set forth.

No. 30,509. Grinding Mill. (*Moulin à blé*)

Henri H. Coles, Philadelphia, Penn., U. S., 31st December, 1888; 5 years.

Claim.—1st. A grinding mill, with the casing A, having bearings C, C', the shaft B journaled in said bearings, the runner D and the pulley J, both rigidly mounted on the shaft B, the spring K, between said pulley and bearing C, the sleeve M secured to bearing C, and having an exterior screw-thread at one end, the interiorly screw-threaded ring L, the head I secured to said shaft B, and screws, substantially as described, intermediate of said head I and ring L, for adjusting said shaft, said parts being combined and operating substantially as described. 2nd. In a grinding mill, the casing A, in combination with the casing F, the bearings C, C', the shaft B having the pulley J, runner D and head I secured thereon, the sleeve M, screw-threaded at one end, the ring L operating on the screw-threaded end of the sleeve M, the boss N¹, with an arm N, and the sleeve S, both boss N¹ and sleeve S being loosely mounted on the shaft B, and each having a cam face, all substantially as and for the purpose set forth. 3rd. In a grinding mill, the casing A, having casing F, provided with the bed E and secured to said casing A, in combination with shaft B having suitable bearings, the runner D and the pivoted gravitating clearer W, the latter attached to the said runner, all substantially as and for the purpose set forth. 4th. In a grinding mill, a concave and a runner partially encircled by the same, for cracking or breaking the material preparatory to grinding, substantially as described. 5th. The shoulders V₃ in the casing, and the screw and nut V₁, V₂, for holding the concave in position, substantially as described.

No. 30,510. Spring Hinge.

(*Charnière à ressort*)

Levi M. Devore and Frederick W. Hoefler, Freeport, Ill., U. S., 31st December, 1888; 5 years.

Claim.—1st. In a spring hinge, the combination of two suitably connected leaves, one of which is provided with a pivotal rod or pin, a spring coil mounted parallel to the hinge axis upon the other of said leaves, and having its free end upon the side of the coil next the door or jamb, and a link connecting said free end with said pivotal rod, substantially as set forth. 2nd. The combination, with the leaf A₁, of the leaf A connected therewith by suitable joints, and having the rod D at one side of the axis of the leaves, the arbor C mounted on the leaf A₁, the springs S, S¹ coiled about the arbor C and having their outer ends s, s¹, secured to the leaf A₁, and their inner ends s¹, s¹ extending towards the rod D, and the link L connecting the ends s¹, s¹, and the rod D, and adapted to cross the axis of the hinge as it is opened or closed, and thereby to reverse the action of the spring upon the leaves, substantially as set forth. 3rd. The combination of the leaves A, A₁, one provided with the rod at one side of the axis of the leaves, and the other with the hood or shell B, the arbor C lying within the shell B and having its ends secured in bearings c, c, in the leaf, the springs S, S¹ coiled about the arbor and having their ends s, s¹, secured by passing through the shell, and their ends s¹, s¹ extended toward the rod D, and the link L connecting the ends s¹, s¹, with the rod, substantially as set forth.

No. 30,511. Machine for Making Paper Boxes. (*Machine à faire les boîtes de papier*)

John R. Stout, Brooklyn, N. Y., U. S., 31st December, 1888; 5 years.

Claim. 1st. In a machine for making boxes, a mould or female die formed of a plurality of plates with interchangeable distance of dimension plates, each removably secured directly to the adjacent plate, whereby the length of said die may be changed without changing the width, and vice versa, substantially as described. 2nd. In a machine for making boxes, a die formed of flanged plates, combined with flanked distance plates, and means for removably connecting the same, substantially as and for the purpose specified. 3rd. In a machine for making boxes, a mould or female die, formed at its upper edge with curved slots, the acting edges of which begin flush with

the side of the die, at right angles to that side of the die in which the slot is formed, substantially as and for the purpose specified. 4th. In a machine for making boxes, the combination, with a female die A, constructed and arranged substantially as herein shown and described, of a male die B, composed of several plates, and made adjustable in length without changing the width, and vice versa, substantially as set forth. 5th. In a box making machine, of the character substantially as herein specified, the combination, with a female die having the curved slots, and the conoidal recesses for forming the box lapping pieces in place of a die section central between said slots, constructed to extend above the general edge of the die, substantially as herein shown and described, whereby in the operation of the machine the ends of the box may be turned up before the lapping pieces are bent inwards, as set forth. 6th. In a machine for making boxes, a mould or female die having each end composed, or partly composed, of two plates l, l, each of which has a curved slot extending down through its upper edge, and has also in its inner face, beneath the lower margin of the slot c, a sunken face fashioned with a conoidal shell-like curve g, the inner or adjacent edges of said plates being projected somewhat above the die edge, all arranged substantially as and for the purpose set forth.

No. 30,512. Calelectric Generator.

(*Générateur calélectrique*)

Edward G. Acheson, Pittsburg, Penn., U. S., 31st December, 1888; 5 years.

Claim.—1st. The method, substantially as herein set forth, of converting heat energy into electrical energy, which consists in causing heat lines to traverse an electric conductor, and producing a magnetic whirl, cutting said heat lines. 2nd. The method, substantially as herein set forth, of converting heat energy into electrical energy, which consists in causing heat currents to traverse an electrical conductor, and in establishing and disestablishing magnetic whirls, cutting said heat conductor. 3rd. The combination, with an electric conductor of comparatively poor conductivity for lines of magnetic force, of another conductor having comparatively high conductivity for lines of magnetic force, a source of heat for heating said first conductor, and means for magnetizing said conductors, substantially as described. 4th. The combination, with an electric conductor, and a heat generator for producing heat therein, of another electric conductor through which varying electric currents are passed, the said conductors being arranged in relation to each other, so that the heat conductor shall be within the influence of the magnetic whirl of the electric conductor, substantially as described. 5th. The combination, with an electric conductor and a heat generator for producing heat therein, of an electric conductor, through which varying electric currents are passed, arranged to produce magnetic whirls, cutting the heat conductor, substantially as described. 6th. The combination, with an electric conductor of comparatively low conductivity for lines of magnetic force, and a generator for producing heat in said conductor, of another conductor of comparatively high conductivity for lines of magnetic force surrounding portions of the first conductor and means for producing intermittent or varying electric currents in said first conductor, substantially as described.

No. 30,513. Coffee Mill. (*Moulin à café*)

Edgar H. Morgan and Charles Morgan, Freeport, Ill., U. S., 31st December, 1888; 5 years.

Claim.—1st. The combination, with the top of a coffee mill box, of a stationary bearing supported upon the top, a grinding shell beneath the top and in contact with the lower surface thereof, and a central rod or rods lying within the hopper connecting said bearing, and said grinding shell, and adapted to draw them together and clamp the top between them, substantially as and for the purpose set forth. 2nd. The combination, with the top A, of the cover B resting on the top, the hopper C, and shell E lying below the top, a hollow spindle F, connecting the cover with the hopper and shell, the cone G suspended within the shell, the bolt H supporting the cone, and passing upward through the spindle, and the crank I, and a regulating device mounted upon the bolt, substantially as and for the purpose set forth. 3rd. The combination, with the top A, of the cover B resting upon said top, and provided with a central bearing, the hopper C, and shell E lying below the top, and provided with the bridge D, and central bearing D₁, and the hollow spindle F connecting the upper and lower bearings, and clamping the top between the cover B, and hopper C, substantially as and for the purpose set forth. 4th. The combination, with the top A, of the cover B provided with a central bearing, and having a central opening formed with notches N in its margin, the hopper C lying beneath the top and provided with the bridge D, and the annular bearing D₁, having a circular opening formed with notches N₁, and the hollow spindle F provided at its upper end with a head F₁, and at its lower end with lugs F₁, adapted to pass through the notches N, N₁, and to support the lower bearing when brought into working position by the rotation of the spindle, substantially as and for the purpose set forth. 5th. The combination, with the top A, of the cover B, provided with a central bearing having a circular opening formed with marginal notches N, the hopper C lying beneath the cover, and provided with bridge D, and the central bearing D₁, having a circular opening formed with marginal notches N₁, and having the lower faces of its walls inclined, as shown, and the hollow spindle F provided with a head F₁, and with marginal lugs F₁, adapted to pass through the notches N, N₁, and to move along the inclined lower faces of the walls, of the bearing D₁ upon the rotation of the spindle, and thereby to draw together the upper and lower bearings, substantially as and for the purpose set forth. 6th. The combination, with the top A, of the cover B resting on said top, and the hopper C lying below said top, and means, substantially as shown and described, for drawing said hopper and cover together, the hopper being provided with lugs C₁ entering notches in the top, and the cover being provided with pins P entering notches in the lugs C₁, with the notches in the top, and with the pins in the cover adapted to prevent rotation of the stationary parts of the mill with reference to each other, substantially as and for the purpose set forth. 7th. In a coffee mill, a belt-carrying bolt revolvably and

vertically movable in stationary bearings, combined with a crank mounted upon a non-cylindrical portion of said bolt, and resting upon the upper of said bearings, a winged nut resting upon said crank and working upon the threaded end of said bolt, and a vertically movable sleeve enclosing said nut, and provided with internal grooves to receive the wings thereon, and with notches in its lower margin to engage a projection upon said crank, whereby the sleeve normally engaging the crank and ensuring the simultaneous rotation of the crank nut and bolt may, when raised out of engagement with the crank, serve to rotate the nut alone and thus to adjust the bolt with its burr vertically.

No. 30,514. Means or Apparatus for Producing Musical Sounds. (*Appareil pour produire des sons musicaux.*)

John Harrington, Coventry, Eng., 31st December, 1888; 5 years.

Claim.—In means or apparatus for producing musical sounds, the employment of tubes made of any suitable metal or alloy, and closed at one or both ends by a plug or cap, substantially as herein shown and described and for the purpose stated.

No. 30,515. Musical Pneumatic Toy. (*Jouet musical pneumatique.*)

William H. Brown, Bolton, Eng., 31st December, 1888; 5 years.

Claim.—The combination, with the disc A, string or cord L, and the handles M, of the metallic plate I, reeds H, and the openings or passages G and D, substantially as and for the purpose hereinbefore set forth.

No. 30,516. Means of Reflecting Gas or other Artificial Light. (*Reverbère à gaz, etc.*)

John Cobbo, London, Eng., 31st December, 1888; 5 years.

Claim.—1st. The improved means of reflecting artificial light, which consists in combining with the lamp, a reflector to throw the rays of light upward and so diffuse the light, substantially as described. 2nd. The improved means of reflecting artificial light, which consists in the combination, with the lamp, of a double reflector or shade adapted to reflect the light in either an upward or downward direction, as may be desired, substantially as set forth. 3rd. The improved means of reflecting artificial light, which consists in the combination with the lamp, of a double reflector formed of practically two truncated conical shades joined at their smaller ends, suitably supported in relation to the said lamp, substantially as described. 4th. The improved means of reflecting artificial light, which consists of the combination, with the reflector, of an opaque, or semi-opaque, ring or sleeve practically surrounding the flame, substantially as and for the purposes set forth.

No. 30,517. Bilge Water Pump. (*Pompe à eau de cale.*)

Nathan Richardson, Little Falls, Minn., U.S., 31st December, 1888; 5 years.

Claim.—1st. A bilge-water pump, consisting of the perforated tube A, provided with the shoulder a at its lower end, the short tube B, fitting over said tube A, and adapted to slide up and down on the same rods C, secured to said tube B, and adapted to move said tube up and down, bar F provided with the stop plate K, inclined shoulders h₂, h₃, and hinge valves a₁, having the arms a₂ bent over the circular stops a₃, said bar, stop plate and valves adapted to move up and down in said tube A, and pivoted rod H having the arms h, h₁, adapted to catch under and over the shoulders h₂, h₃, on bar F, substantially as shown and described and for the purpose set forth. 2nd. A bilge-water pump, consisting of the perforated tube A, provided with the shoulder a at its lower end, the short tube B fitting over said tube A, and adapted to slide up and down on the same, rods C secured to said tube B, and adapted to move said tube up and down, bar F provided with stop plate K, inclined shoulders h₂, h₃, and hinge valves a₁, having the arms a₂ bent over the circular stops a₃, said bar, stop plates and valves adapted to move up and down in said tube A, substantially as shown and described and for the purposes set forth. 3rd. A bilge-water pump, consisting of the perforated tube A, provided with the shoulder a at its lower end, the short tube B fitting over said tube A, and adapted to slide up and down on the same, rods C secured to said tube B, and adapted to move said tube up and down, bar F provided with the stop plate K, inclined shoulders h₂, h₃, and hinge valves a₁, having the arms a₂ bent over the circular stops a₃, said bar, stop plate and valves adapted to move up and down on said tube A, and stops G adapted to impinge against the upper face of plate K, and spring g secured to the outer face of said tube A, and carrying said stops G, substantially as shown and described and for the purposes set forth. 4th. In a bilge-water pump, as above described, the bar F having secured on its lower end the circular stops a₃, having the stop shoulders a₄, and the valves a₁ hinged to the lower end of said bar, having the arms a₂ turned over said stops, and adapted to catch against said stop shoulders a₄, substantially as shown and described. 5th. The pump-house E built around the tube A, and secured in the bottom of the vessel to protect said tube, covered with the flange D, and having the grooved gateway g leading to the perforations in said tube, and tongued gate e fitting in said gateway, substantially as shown and described. 6th. The combination of the pump-house E, the flange D secured on the top of said pump-house, and said pump secured to said flange and passing down through said boat guard J, secured to the bottom of the vessel in front of said pump, all substantially as shown and described and for the purposes set forth. 7th. The combination, with the vessel, of the pump-house E secured in the bottom of the vessel, the bilge-water pump, as above described, secured in the bottom of the vessel by means of the flange D, and spring bar N, or guard J, secured to the bottom of the vessel in front of said pump, substantially as shown and described and for the purpose set forth.

No. 30,518. Automatic Device for Rivetting Metal Spokes in Wheel Rims. (*Appareil automatique pour river les rayons métalliques des roues aux jantes.*)

Arthur P. Ricard, Toledo, Ohio, U.S., 31st December, 1888; 5 years.

Claim.—1st. In a rivetting machine, a chuck or wheel holder having spoke clamps movable radially from the centre, as and for the purpose set forth. 2nd. In a rivetting machine, a chuck or wheel holder having threaded rods, spoke clamps upon the rods adapted to be moved radially by the revolution of the rods, as and for the purpose set forth. 3rd. A chuck or wheel holder comprising rods threaded alternately right and left, each rod having a bevel gear upon its inner end, and a squared outer end, spoke clamps mounted upon the rods in such manner as to move radially from the centre of the chuck by the revolution of the rods, as and for the purpose set forth. 4th. In a chuck or wheel holder, spoke clamps having hinged jaws held closed by yielding connections, as and for the purpose set forth. 5th. In a wheel holder, spoke clamps having jaws adapted to be opened and closed for the insertion or removal of spokes, each having a die for clamping the spoke, as and for the purpose set forth. 6th. In a device for rivetting metal spokes in wheel rims, a power shaft provided with a lug, a bell-crank lever, one end of which is in the path of the rotation of said lug, the opposite end being connected to a movable table having a wheel holder mounted thereon, as and for the purpose set forth. 7th. In a device for rivetting metal spokes and wheel rims, in combination with a spoke clamp, grapples connected with movable arms, said arms being reciprocated by means of a cam upon the power shaft, as and for the purpose set forth. 8th. In a device for rivetting spokes in wheel rims, grapple arms opened from, and closed into, engagement with a spoke clamp by the reciprocation of a frame to which the grapples are attached, as and for the purpose set forth. 9th. In a device for rivetting spokes in wheel rims, in which grapples are opened and closed by the action of arms in connection with the power shaft, a catch attached to a frame, and adapted to engage with a lug on the plunger, and springs connected with the table and frame, as and for the purpose set forth. 10th. In a device for rivetting spokes in wheel rims, in combination with a spoke clamp, a riveter connected with arms operated by an eccentric upon the power shaft, as and for the purpose set forth.

No. 30,519. Machine for Turning Articles of Metal, etc. (*Machin à tourner des articles de métal, etc.*)

Robert B. Coddling, Bristol, Conn., U.S., 31st December, 1888; 5 years.

Claim.—1st. In a turning machine, the combination of two lathe centres adapted to move longitudinally, a carrier and turning tool moving together between said centres at right angles to their axis, and operating mechanism for imparting the relatively timed movements to said centres, carrier and turning tool, substantially as described and for the purpose specified. 2nd. In a turning machine, the combination of two lathe centres adapted to move longitudinally, a carrier and turning tool moving together between said centres at right angles to their axis, a chute fixed over the path of the carrier for feeding work thereto, and operating mechanism for imparting the relatively timed movements to said centres, carrier and turning tool, substantially as described and for the purpose specified. 3rd. In a turning machine, the combination of lathe centres and a chute respectively adapted to revolve the work, and to hold blanks, the slide H moving between the lathe centres at right angles to their axis, and provided with a carrier and turning tool, and mechanism for reciprocating said slide, substantially as described and for the purpose specified. 4th. In a turning machine, the combination of a chute for holding blanks, the slide having the yielding carrier f adapted to move under the chute to receive a blank, and then to move away and carry a blank therefrom, and mechanism for grasping the blank when on the carrier, whereby the yielding of the carrier f when the work is grasped permits the return movement of the carrier to receive another blank, substantially as described and for the purpose specified. 5th. In a turning machine, the combination of mechanism for grasping the work, the reciprocating slide provided with a carrier, the chute d for holding blanks, and the spring g for holding the blank within the carrier during its advance movement, substantially as described and for the purpose specified. 6th. In a turning machine, the combination of the lathe centres mounted to move longitudinally, the slide bearing a turning tool and carrier, the chute over the path of the carrier, the levers D, D, cams E, E, and the cam I, substantially as described and for the purpose specified. 7th. In a turning machine, the combination of the driving centre, and the spring-pressed follower at its outer end adapted to start the work from off said centre, substantially as described. 8th. In a turning machine, the centres herein described for turning castor rollers, said centres having axial openings to admit the hubs of said rollers, and having their peripheries near their outer ends adapted to enter the rims and centres of the rollers thereby, substantially as described. 9th. In a turning machine, the combination of a driving centre, and the companion centre, and the spring-pressed follower having a central depression for temporarily centering the work, substantially as described. 10th. In a turning machine, the combination of the driving centre having a spring-pressed follower limited in its outward movement to a point inside the outer end of said centre, and the companion centre having the spring-pressed follower which project beyond the outer end of said centre, substantially as described and for the purpose specified.

No. 30,520. Ore Separator.

(*Séparateur des minerais.*)

Alvan P. Grainger, Denver, Col., U.S., 31st December, 1888; 5 years.

Claim.—1st. The combination in a rotary ore sizing mechanism, of a series of conical screens mounted on a single inclined axis, and arranged with their larger ends towards the more elevated end of the axis, a series of imperforate rotating tubular shells severally sur-

rounding and concentric with said screens, the lower end of each shell being arranged in line with the succeeding screen, whereby it may discharge directly into said screen, a head closing the lower end of each screen, and a series of tubular passages leading laterally from the foot of each screen through the surrounding shell, substantially as described. 2nd. The combination in a pneumatic ore separator, of a vibratory precipitator, having curved apertures, a dressing plate supported over the precipitator with an air passage between them, which is open at their feet, a suction fan communicating with said space through the apertures of the precipitator, a feed passage for the ore delivering upon the head of the precipitator, and a feed-regulator applied to said passage adapted to restrain the admission of air with the ore, substantially as described. 3rd. A vibratory precipitator, having apertures provided with projecting curbs, and having a depression or depressions in its surface for the formation of a mineral bed thereon, substantially as described. 4th. The combination of an apertured inclined and reciprocating precipitator, having its angle of inclination adjustable about an axis at its head, a dressing plate arranged over the precipitator, and also adjustable as to its inclination about an axis near that of the precipitator, and a suction fan in communication with the space between the precipitator and the dressing plate through the apertures in the precipitator, substantially as described. 5th. The combination of an apertured inclined and reciprocating precipitator, having its angle of inclination adjustable about an axis at its head, a dressing plate supported on an axis near that of the precipitator, devices for adjusting the precipitator and the dressing-plate, both together and independently, and a suction fan communicating with the space between the precipitator and dressing plate through the apertures in the precipitator, substantially as described. 6th. The combination of an inclined reciprocating precipitator, provided with curved apertures, and with a depression for the formation of a mineral bed thereon, a dressing plate supported above the precipitator, and a suction fan communicating with the space between the precipitator and dressing plate through the holes in the precipitator, substantially as described. 7th. A precipitator for ore separators, provided with apertures having curbs which entirely surround said apertures, and which converge at acute angles at their ends, and which have their greater length in the direction in which the material to be separated moves over the precipitator, substantially as described. 8th. The combination with an adjustable precipitator of joined levers connected with the opposite sides of the precipitator, whereby both sides of the precipitator may be simultaneously and equally adjusted, substantially as described. 9th. The combination of a precipitator, a superposed dressing plate, a transverse vertically movable bar, and flexible plate supporting the foot of the precipitator, and a lever connected with the transverse bar, and having adjustable engagement with the dressing plate, substantially as described. 10th. The combination of a precipitator, an inclined board having an inclined bottom beneath the precipitator provided with a discharge passage at its lower margin, an upwardly inclined air passage beneath said board, provided with an outwardly opening valve at its lower end, and a suction fan communicating with the upper end of said air passage, substantially as described. 11th. The combination with a frame a supply hopper and a precipitator beneath the hopper, an open space being provided within the frame between the hopper and precipitator, of a transparent dressing plate over the precipitator, and devices for regulating the precipitator located at the open side of the machine, whereby the effects of adjustment may be observed while being made, substantially as described.

No. 30,521. Steam Cooker.

(Cuisinière à vapeur.)

Alexander M. Amos, Buffalo, N. Y., U. S., 31st December, 1888; 5 years.

Claim.—1st. In a steam cooker, the combination of the cover G, having the inwardly projecting rim g, and the tapering body A having the projecting rib h, forming the gutter c, substantially as and for the purpose specified. 2nd. In a steam cooker, the combination with the body A, of a tube L formed on the outside of the body A, with its lower end communicating with the body, and a hollow plug J seated in the outer open end of tube L, and provided with a lateral opening j, a bottom opening j, a wall j² extending upwardly from the bottom opening and terminating near the lateral opening, all substantially as specified. 3rd. In a steam cooker, the combination, with the body A, of a tube I formed on the outside of the body A, with its lower end communicating with the body, a hollow plug J seated in the outer open end of tube I and provided with a lateral opening j, a bottom opening j, a wall j² extending upwardly from the bottom opening and terminating near the lateral opening, and a lip or guard K² formed above the lateral opening j, and whereby the steam escaping from the opening j¹ is deflected outwardly, all substantially as set forth. 4th. In a steam cooker, the combination with the body A, provided with an opening m in its side, of a guard or shield n, covering the opening m, and provided with an opening o, having a raised annular rim o, a spring valve p bearing upon the raised rim o, and a pipe L inclosing the guard n, substantially as set forth. 5th. In a steam cooker, the combination, with the body A provided with an opening m in its side, of a guard or shield n covering the opening m, an opening of spring valve p and a tube L bent at the lower end in a line with and forming a part of the bottom, all arranged and operating substantially as and for the purpose specified. 6th. The combination in a steam cooker, of the spring valve p, closing the spring o, of guard n in tube L and opening m, the tube L having an opening into steam chamber d, and the removable, combined whistle and plug J, j¹, j², all constructed, arranged and operating substantially as and for the purpose specified.

No. 30,522. Motor. (Moteur.)

George W. Baily and George R. Leidersporger, Sagerstown, Penn., U. S., 31st December, 1888; 5 years.

Claim.—1st. The combination of the driving shaft, provided with a weight arm, a rocking bearing for the upper end of the shaft, a rocking support for the bearing, and a shaft provided with a pulley connected to and operated by the weighted shaft, substantially as

shown. 2nd. The combination of a suitable frame-work, provided with an incline at each end, the rocking support provided with hangers, the shaft provided with a weight or arm, and the driving shaft provided with a pulley, substantially as set forth. 3rd. The combination of the shaft C, provided with a pulley D, and having a socket in its upper end, the weighted shaft G, the rocking bearing H through which the upper end of the weighted shaft passes, and a rocking bearing J, provided with a crank, substantially as set forth.

No. 30,523. Rail or Tramway, in which the Vehicles or Waggon are Moved by Chains or Collars. (Chemins à oméres et câble.)

Constantin Klinik, Königshatto, and Franz Lawischa, Bouthon, Germany, 31st December, 1888, 5 years

Claim.—1st. In a rail or tramway of the kind herein described, an endless chain having links provided with rollers and with studs, or their equivalent, and a conducting rail provided with a longitudinal groove for conducting the rollers of the chain links, said chain being arranged in such a manner that it is put in motion by a propulsion sheave or wheel, and the said studs or equivalent devices thereon being adapted to move the waggon or cars, substantially as described. 2nd. In a rail or tramway of the kind herein described, an endless chain arranged and constructed in such a manner that the links therein are connected together by bolts or pins, which bolts or pins bear conducting rollers e and e', said rollers serving as a means of conducting the chain horizontally and vertically, certain links of the chain being provided with studs which lie in the same horizontal plane as the axle of the waggon or other vehicle to be propelled, substantially as described. 3rd. In connection with a chain of the type herein described, a closed conducting rail having a longitudinal slot k for conducting the chain in curves, the said chain being adapted to lay itself horizontally by rails, as e, and e', and vertically by rails, such as e² and e³, and the studs f of the chain being arranged to pass through the said slot k, substantially as described. 4th. In a rail or tramway of the kind herein described bent or curved conducting rails, of the kind specified, for conducting the chain below the rails and track crossings, and without the use of conducting rollers. 5th. In a rail or tramway of the kind herein described, the combination of the chain links a, a, having the propelling studs f fixed therein, the conducting rails, the conducting rail having the slot k therein, bent or curved conducting rails, having the slot k therein and chain wheels, substantially as described. 6th. The combination, with the chain, composed of links a, a, having rollers e, e', of the studs f, having buffers g, g, substantially as described.

No. 30,524. Rotary Excavator for Removing Snow. (Fouilleur rotatoire pour enlever la neige.)

Edward Leslie, Orangeville, Ont., 31st December, 1888, 5 years.

Claim.—1st. In a rotary excavator, a revolving wheel provided with radial wings or fans, and sets of knives held on the front of the said wheel, and located, one in front of the other, substantially as shown and described. 2nd. In a rotary excavator, a revolving wheel provided with radial wings or fans, and sets of knives held on the said wheel, and arranged one above the other and one in front of the other, substantially as shown and described. 3rd. In a rotary excavator, the combination, with a revolving wheel provided with a central cone at its front and radial wings or fans, of sets of knives, arranged one above the other and arranged alternately, substantially as shown and described. 4th. In a rotary excavator, the combination, with a revolving wheel provided with a central cone held at its front end, of radial wings or fans held on the said wheel, sets of reversible knives held on the front of the said wheel, and located one above the other, and one in front of the other, substantially as shown and described. 5th. In a rotary excavator, the combination, with a revolving wheel, of radial fans held on the said wheel, and three sets of self-reversing knives held in front of the said wheel, and arranged alternately, and one above the other and one in front of the other, substantially as shown and described. 6th. In a rotary excavator, the combination with a wheel having radial wings or fans, of self-reversing knives held on the front of the said wheel, and locked automatically in place, substantially as shown and described. 7th. In a rotary excavator, the combination, with a wheel having radial wings or fans, of self-reversing knives held on the front of the said wheel, and means, substantially as described, for automatically locking the said knives in place, as set forth. 8th. In a rotary excavator, the combination, with a revolving wheel provided with radial wings or fans, and a cone in its centre in front of an inner set of knives held in front of the said wheel, a middle set of knives held on the front of the said wheel, the several knives of this set being placed alternately with the several knives of the said inner set of knives, and an outer set of knives also held on the front of the said wheel and having its several knives located alternately with the several knives of the said middle set of knives, substantially as shown and described. 9th. In a rotary excavator, the combination, with a revolving wheel provided with radial wings or fans, and a cone in its centre in front of an inner set of knives held in front of the said wheel, a middle set of knives held on the front of the said wheel, the several knives of this set being placed alternately with the several knives of the said inner set of knives, and an outer set of knives also held on the front of the said wheel, and having its several knives located alternately with the several knives of the said middle set of knives, and covering plates

held on the said wheel between the successive knives of the outer set of knives, substantially as shown and described. 11th. In a rotary excavator, the combination, with a revolving wheel, provided with radial wings or fans, and a cone in its centre in front of an inner set of knives held in front of the said wheel, a middle set of knives held on the front of the said wheel, the several knives of this set being placed alternately with the several knives of the said inner set of knives, and an outer set of knives also held on the front of the said wheel, and having its several knives located alternately with the several knives of the said middle set of knives, the said several sets of knives being reversible and adapted to lock themselves automatically in place on the said wheel, substantially as shown and described. 12th. In an excavator, the combination, with a stationary hood of a revolving wheel, provided with sets of knives and cutters held on the rim of the said wheel, and extending horizontally and outward and upward toward the said hood to direct the snow to the said knives, substantially as shown and described. 13th. In an excavator, the combination, with a hood, of a revolving wheel provided with sets of knives, and radial wings or fans and inclined cutters held on the periphery of the said wheel, and extending outward toward the said hood in front of the said wheel to direct the snow to the said knives, substantially as shown and described. 14th. In an excavator, the combination, with a hood, and a casing supporting the said hood, of a wheel held to revolve in the said casing, and provided with radial wings or fans, sets of self-reversing knives held in front of the said wheel in the said hood, and inclined cutters held on the periphery of the said wheel, and extending outward toward the said hood in front of the wheel to direct the snow to the said knives, substantially as shown and described. 15th. In an excavator, the combination, with a fixed casing, and a hood supported in the same, of a wheel held to rotate in the said casing, and provided with sets of self-reversing knives, and segmental plates held on the said wheel, and having an upwardly turned inner edge extending toward the said hood to prevent the snow from passing from the fans to the front of the wheel, substantially as shown and described. 16th. In an excavator, the combination, with a revolving wheel, of knives held to swing on the front of the said wheel, an arm extending from the said knives, and provided with a lug, and a fixed lug held on the said wheel, and engaged by the lug on the said arm, substantially as shown and described. 17th. In an excavator, the combination, with a revolving wheel, of knives held to swing on the front of the said wheel, an arm extending from the said knives, and provided with a lug, a fixed lug held on the said wheel, and engaged by the lug on the said arm, and a spring pressing against the said knife to hold the lug of its arm in contact with the said lug on the said wheel, and also permitting the said arm to pass with its lug over the fixed lug when the wheel is reversed, substantially as shown and described. 18th. In a rotary excavator, a hood constructed with four sides of which the lower sides has a straight V-shaped front edge and bevelled corner pieces, substantially as shown and described. 19th. In a rotary excavator, the cylindrical casing constructed with a section of its lower part cut away, in combination with the sloping floor of the hood extending under the said cut-away section as herein described, whereby the entrance of the snow, or other material, is facilitated, as set forth. 20th. In a rotary excavator, the combination with a cylindrical casing having part of its lower front end cut out of a hood formed on the front end of the said casing, and provided in its bottom corners with corner pieces or gussets leading to the lower cut-out end of the casing, substantially as shown and described. 21st. In a rotary excavator, the combination, with the casing and delivering spout, of a tangent deflector made adjustable on and over said spout, substantially as shown and described, to direct the stream of snow to any desired point and in different tangential lines at either sides of the track, as set forth. 22nd. In a rotary excavator, the combination, with the delivery spout, and the tangent deflector mounted to move circularly over the spout, of gearing arranged and operated essentially as described for adjusting the position of the tangent deflector, as set forth. 23rd. In a rotary excavator, the combination, with the casing and delivering spout, of the tangent deflector mounted to move circularly on or over the spout, gearing essentially as described for imparting a rotary motion to the said deflector, and a locking device for holding the said deflector in any desired position on or over the said spout, thereby governing the tangent line of discharge, as set forth. 24th. In a rotary excavator, the combination, with the casing, and a delivery spout, of a tangent deflector held on top of the said spout, arms extending from the said deflector and pivoted on the said spout, a shaft on which one of the said arms is secured, said shaft forming one of the pivots, a gear wheel held on the said shaft, a pinion meshing into the said gear wheel, and a shaft carrying the said pinion, and provided with a hand wheel, substantially as shown and described. 25th. In a rotary excavator, the combination, with the casing and delivery spout, of a tangent deflector held on top of the said spout, arms extending from the said deflector, and pivoted on the said spout, a shaft on which one of the arms is secured, said shaft forming one of the pivots, a gear wheel held on the said shaft, a pinion meshing into the said gear wheel, a shaft carrying the said pinion, and provided with a hand wheel, and a double pawl adapted to engage the said gear wheel to lock it in position, substantially as shown and described.

No. 30,525. Apparatus for Electric welding.
(Appareil de soulage électrique.)

Elihu Thomson, Lynn, Mass., U.S., 31st December, 1888, 5 years

Claim.—1st. In an electric welding apparatus, movable clamping

jaws adapted to be forced together during the welding process on a line corresponding to the curve of the pieces to be welded, and means for passing a welding current through the pieces, substantially as described. 2nd. In an electric welding apparatus, the combination with a swivelled or pivoted stationary clamping jaw, of a swivelled or pivoted moving jaw adapted to be forced toward the stationary jaw during the operation of welding, and means for passing a welding current through the pieces, substantially as specified. 3rd. In an electric welding apparatus, swivelled or pivoted clamping jaws, one of which is movable to and from the other, and means for passing a welding current through the pieces, substantially as specified. 4th. In an electric welding apparatus swivelled or pivoted clamping jaws, one of which is mounted on a slide movable to and from the other jaw, and means for passing a welding current through the pieces. 5th. In an electric welding apparatus, the combination of pivoted or swivelled clamping jaws, one of which is adapted to be forced toward the other in the operation of welding, pivoted guided arms for said jaws turning on a centre substantially coincident with the centre of the curved pieces to be welded, and giving a partially rotating motion to said clamping jaws, and means for passing the welding current through the pieces, substantially as specified. 6th. In an electric welding apparatus, the combination of clamping jaws adapted to be forced together during the operation of the welding, and a signalling apparatus actuated by the movement of said jaws to a predetermined point. 7th. In an electric welding apparatus, the combination of a stationary clamping jaw, a movable clamping jaw mounted on a slide, and a signalling apparatus actuated by the movement of said slide at a predetermined point.

No. 30,526. Electro-Medical Apparatus.
(Appareil électro-médical.)

John S. Muir, San Francisco Cal., U.S., 31st December, 1888; 5 years.

Claim.—1st. In an instrument of the character described, the combination of the case or handle in which is mounted an induction-coil, and a battery, and the frame B adapted to carry a rolling electrode, and having a circuit interrupter also mounted on it, the terminals of the induction-coil being brought out at the end of the handle, and suitably exposed to make electric connection with the circuit-interrupter, and the electrode H, as heretofore described. 2nd. In an instrument of the character described, the combination, with the frame B having a rolling electrode mounted on it for rotation, as described, of the detachable handle containing an induction-coil, and a battery, and having the terminals of the same brought out to the end where the handle sets into the frame, substantially as described. 3rd. In an instrument of the character described, the circuit-interrupter consisting of the wheel L, and the contact-spring K in electric connection with the frame B, and the primary-coil and driving mechanism, substantially as described, which connects the interrupter-wheel with the rolling electrode to operate the same from the motion of the electrode, as set forth. 4th. In an instrument of the character described, the combination of the handle or part carrying an induction-coil, and a battery, and having a surface-electrode, and the frame or other part having a rolling electrode, and a circuit interrupter mounted on it, the said parts being separable, substantially as described. 5th. The combination of the rolling electrode in circuit, as described, and the circuit-interrupter having driving-wheels or surfaces which are adapted to run against the rolling electrode to be driven by the rotation thereof, substantially as described.

No. 30,527. Apparatus for Controlling Ships' Rudders.
(Appareil pour contrôler les gouvernails des navires.)

Thomas G. Stevens, Swansecombe, Eng., 31st December, 1888, 5 years.

Claim.—1st. In apparatus for retaining ship's rudders from turning away from any position into which they may be turned, the combination of a disc or wheel on the rudder head, or geared thereto so as to turn with it, and a friction band embracing this disc or wheel, and screw for tightening the band around the disc or wheel, and retaining it firm in turning, substantially as described. 2nd. The combination of a disc or wheel on the rudder head, or geared thereto so as to turn with it, a friction band embracing such disc or wheel, screw-nuts pivoted to, or bearing against, projections on the ends of the band, and screwing one on to a right handed, and the other on to a left handed screw thread cut on a spindle carried in fixed bearings. 3rd. The combination of a disc or wheel on the rudder head, or geared thereto so as to turn with it, a friction band embracing such disc or wheel, screw nuts pivoted to or bearing against projections on the ends of the band, a spindle carried in fixed bearings, and having right and left handed screw threads cut upon it, one screw thread of larger diameter than the other, and the screw threads screwing into corresponding screw nuts, substantially as described. 4th. The combination of a disc or wheel on the rudder head, or geared thereto so as to turn with it, a friction band embracing such disc or wheel, screw-nuts pivoted to, or bearing against, projections on the ends of the band, a spindle with right and left handed screw threads cut upon it screwing into such nuts, and a projection on the band entering a recess in a fixed block, or a projection on the block entering a recess in the band to prevent the band from turning, substantially as described.

**CERTIFICATES OF THE PAYMENT OF FEES FOR FURTHER TERMS HAVE BEEN ATTACHED TO
THE FOLLOWING PATENTS.**

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| <p>1302. W. H. HART, 3rd 5 years of No. 10,124, from the 23rd day of June, 1888. Improvements on Hinges, 3rd December, 1888.</p> | <p>1309. A. MARKHAM, 2nd 5 years of No. 18,300, from the 14th day of December, 1888. Art or Process of Changing or Converting the Mineral Substances known as Manganite, Braunitz and Manganese, which are largely composed of Brown Peroxide of Manganese and Iron Nitro Blue Peroxide of Manganese, 13th December, 1888.</p> |
| <p>1303. E. C. GREENWAY, 2nd 5 years of No. 18,361, from the 26th day of December, 1888. Improvements on Breakwaters, 3rd December, 1888.</p> | <p>1310. W. HILTON, 2nd 5 years of No. 18,492, from the 21st day of January, 1888. Improvements on Mining Machines, 13th December, 1888.</p> |
| <p>1304. J. S. PEARSON, 2nd 5 years of No. 18,247, from the 4th day of December, 1888. Improvements on Machines for the Manufacture of Mineral Waters, 4th December, 1888.</p> | <p>1311. THE ROTARY STEAM SNOW SHOVEL CO., (assignee), 2nd and 3rd 5 years of No. 18,506, from the 22nd day of January, 1888. Improvements on Snow Ploughs, 14th December, 1888.</p> |
| <p>1305. THE DOMINION FIRE ESCAPE CO., (assignee) 2nd 5 years of No. 18,297, from the 14th day of December, 1888. Improvements in Fire Escape Ladders, 6th December, 1888.</p> | <p>1312. H. HOLGATE and R. B. BAGNALL, 2nd 5 years of No. 18,332, from the 19th day of December, 1888. Rail Stringer, 14th December, 1888.</p> |
| <p>1306. A. MITSCHERLICH, 2nd and 3rd 5 years of No. 20,446, from the 23th day of October, 1888. Improvements in Stamp Mills for the Manufacture of Cellulose, 10th December, 1888.</p> | <p>1313. THE INTERNATIONAL TERRA COTTA LUMBER CO., (assignee), 2nd 5 years of No. 18,452, from the 15th day of January, 1888. Improvements in the Housings and Insulation of Electrical Wires Beneath the Surface of the Ground, 17th December, 1888.</p> |
| <p>1307. THE INTERNATIONAL SULPHITE FIBRE AND PAPER CO., (assignee), 2nd and 3rd 5 years of No. 20,484, from the 3rd day of November, 1888. Improvements in the Armature and Tube Couplings in Apparatus for Manufacturing Cellulose, 10th December, 1888.</p> | <p>1314. THE BOSTON BRAIDING CO., (assignee) 2nd 5 years of No. 18,376, from the 28th day of December, 1888. Improved Braiding Machine, 27th December, 1888.</p> |
| <p>1308. THE INTERNATIONAL SULPHITE FIBRE AND PAPER CO., (assignee), 2nd and 3rd 5 years of No. 22,052, from the 9th day of July, 1888. Improvements in the Process and Apparatus for the Manufacture of Cellulose and Secondary Products, 10th December, 1888.</p> | |

DECEMBER LIST OF TRADE MARKS.

Registered at the Department of Agriculture—Copyright and Trade Mark Branch.

3313. GEO. T. SLATER & SONS, of Montreal, Que. Shoes, 4th December, 1888.
3314. THE FRAME FOOD COMPANY (L'd.), of Lombard Road, Battersea, Co. of Surrey, England, General Trade Mark, 4th December, 1888.
3315. THE FARBENFABRIKEN vormals FRIEDRICH BAYER AND COMPANY, of Elberfeld, Germany. A New Antipyretic, 4th December, 1888.
3316. THE FARBENFABRIKEN vormals FRIEDRICH BAYER AND COMPANY, of Elberfeld, Germany. Narcotics, 4th December, 1888.
3317. WILLIAM PATON, of Johnstone Mill, Johnstone, Co. of Renfrew, Scotland. Boot and Shoe Laces, 4th December, 1888.
3318. ALLMAN & CO., of Bandon, Co. of Cork, Ireland. Irish Whisky, 5th December, 1888.
3319. THE BRANTFORD CORDAGE COMPANY (L'd), of Brantford, Ont. Binding Twine and Cordage of all Kinds, 6th December, 1888.
3320. P. W. ELLIS & CO., of Toronto, Ont. Main Springs for Watches, 10th December, 1888.
3321. SPILLING BROS., of Toronto, Ont. Cigars, 10th December, 1888.
3322. MICHEL LEFEBVRE ET CIE., of Montreal, Que. General Trade Mark, 10th December, 1888.
3323. GEORGE WATERSTON & SONS, of Edinburgh, Scotland. Sealing, Bottling, Packing and other similar Waxes, 10th December, 1888.
3324. OFFLEY, FORRESTER & CO., of 66 Mark Lane, London, England. Wines, 11th December, 1888.
3325. OFFLEY FORRESTER & CO., of 66 Mark Lane, London, England. Wines, 11th December, 1888.
3326. GEORGE FRASER, of Truro, N.S. Fraser's Improved Cattle Food, 11th December, 1888.
3327. COLUMBIA CHEMICAL WORKS, of Brooklyn, N.Y., U.S.A. A detergent containing Ammonia, 11th December, 1888.
3328. C. J. VAN HOUTEN & ZOON, of Weesp, Holland. Any Manufactures or Preparations made partly or exclusively from Cocoa Beans (Cocoa Beans) 17th December, 1888.
3329. C. J. VAN HOUTEN & ZOON, of Weesp, Holland. Any Manufactures or Preparations made partly or exclusively from Cocoa Beans (Cocoa Beans), 17th December, 1888.
3330. C. J. VAN HOUTEN & ZOON, of Weesp, Holland. Any Manufactures or Preparations made partly or exclusively from Cocoa Beans (Cocoa Beans), 17th December, 1888.
3331. C. J. VAN HOUTEN & ZOON, of Weesp, Holland. Any Manufactures or Preparations made partly or exclusively from Cocoa Beans (Cocoa Beans), 17th December, 1888.
3332. LEVER BROTHERS, of Warrington, County of Lancaster, England. Soaps, Detergents, Starch, Blue and other Laundry Goods, also Fancy Soaps, Perfumery and other Toilet Preparations, 18th December, 1888.
3333. LEVER BROTHERS, of Warrington, County of Lancaster, England. Soaps, Detergents, Starch, Blue and other Laundry Goods, also Fancy Soaps, Perfumery and other Toilet Preparations, 18th December, 1888.
3334. LOUIS SAMSON, de Montréal, Que. Marque de Commerce Generale, 20 Decembre, 1888.
3335. SERAPHIM LACHANCE de Montréal, Que. Remede, ayant pour nom "Le Remede du Père Mathieu," 20 Decembre, 1888.
3336. JOSEPH RODGERS & SONS, LIMITED, of Sheffield, England. General Trade Mark, 21st December, 1888.
3337. BRENER BROS., of London, Ont. Cigars, 22nd December, 1888.
3338. N. K. FAIRBANK & CO., of Chicago, U.S.A. Food Oils and Unctious Food Substances, 24th December, 1888.
3339. N. K. FAIRBANK & CO., of Chicago, U.S.A. Food Oils and Unctious Food Substances, 24th December, 1888.
3340. THE STEELE BROS. CO., LIMITED, of Toronto, Ont. The Steele Bros. Co's. Improved Short White Carrot, 31st December, 1888.

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4556. GALLOPING DAYS AT THE DEANERY. By Charles James (book). Wm. Bryce, Toronto, Ont., 1st December, 1888.
4557. PEPITA. Valse on Ch. Lecocq's Opera. By P. Bucalossi. The Anglo-Canadian Music Publishers' Association (L'd.), London, England, 3rd December, 1888.
4558. SELECTION FROM LECOCQ'S OPERA "PEPITA," for the pianoforte. By W. Winterbottom. The Anglo-Canadian Music Publishers' Association (L'd.), London, England, 3rd December, 1888.
4559. THE DOMINION ILLUSTRATED, Volume I., Number 13, 3rd Nov., 1888.
4560. " " " " " " 19, 10th " "
4561. " " " " " " 20, 17th " "
4562. " " " " " " 21, 24th " "
4563. " " " " " " 22, 1st Dec., 1888.
- (Publication). G. E. Desbarats & Son, Montreal, Que., 3rd December, 1888.
4564. A DANGEROUS CATSPA. By D. C. Murray and Henry Murray (book). Wm. Bryce, Toronto, Ont., 3rd December, 1888.
4565. THE MYSTERY OF MARTHA WARNE (A tale of Montreal). By Arthur Campbell. J. Theo. Robinson, Montreal, Que., 3rd December, 1888.
4566. LE GAMMA MUSICAL, ou Exposé Raisonné des Principes de la Musique, accompagné de l'histoire des Signes et des faits à l'usage des Elèves des Ecoles et Cours de Musique. Par Gustave Smith. Charles Gustave Smith, Ottawa, Ont., 6th December, 1888.
4567. NOVA SCOTIA LAW REPORTS, or Cases argued and delivered in the Supreme Court of Nova Scotia. Reported by Benjamin Russell, M. A., and John M. Geldert, Jr., LL.B., Volume I., 1879-80. A. & W. Mackinlay, Halifax, N.S., 6th December, 1888.
4568. NOVA SCOTIA LAW REPORTS, or Cases argued and determined in the Supreme Court of Nova Scotia. Reported by Benjamin Russell, M. A., and John M. Geldert, Jr., LL.B., Volume II., 1880-81. A. & W. Mackinlay, Halifax, N.S., 6th December, 1888.
4569. NOVA SCOTIA LAW REPORTS, or Cases argued and determined in the Supreme Court of Nova Scotia. Reported by Benjamin Russell, M. A., and John M. Geldert, Jr., LL.B., Volume III., 1881-82. A. & W. Mackinlay, Halifax, N.S., 6th December, 1888.
4570. NOVA SCOTIA LAW REPORTS, or Cases argued and determined in the Supreme Court of Nova Scotia. Reported by Benjamin Russell, M. A., and John M. Geldert, Jr., LL.B., Volume IV., 1882-83. A. & W. Mackinlay, Halifax, N.S., 6th December, 1888.
4571. NOVA SCOTIA LAW REPORTS, or Cases argued and determined in the Supreme Court of Nova Scotia. Reported by Benjamin Russell, M. A., and John M. Geldert, Jr., LL.B., Volume V., 1883-84. A. & W. Mackinlay, Halifax, N.S., 6th December, 1888.
4572. NOVA SCOTIA LAW REPORTS, or Cases argued and determined in the Supreme Court of Nova Scotia. Reported by Benjamin Russell, M. A., and John M. Geldert, Jr., LL.B., Volume VI., 1884-86. A. & W. Mackinlay, Halifax, N.S., 6th December, 1888.
4573. NOVA SCOTIA LAW REPORTS, or Cases argued and determined in the Supreme Court of Nova Scotia. Reported by Benjamin Russell, M. A., and Samuel A. Chesley, M. A., Barrister-at-Law. Volume III., 1877-79. A. & W. Mackinlay, Halifax, N.S., 6th December, 1888.
4574. THE EQUITY DECISIONS OF THE HON. JOHN W. RITCHIE, Judge in Equity of the Province of Nova Scotia, 1873-82. Edited by Benjamin Russell, M. A. A. & W. Mackinlay, Halifax, N.S., 6th December, 1888.
4575. DECISIONS OF THE SUPREME COURT OF NOVA SCOTIA. Edited by John W. Geldert, Jr., LL.B., and James M. Oxley, LL.B., B. A., Volume I., 1866-69. A. & W. Mackinlay, Halifax, N. S., 6th December, 1888.
4576. DECISIONS OF THE SUPREME COURT OF NOVA SCOTIA. Edited by John M. Geldert, Jr., LL.B., and James M. Oxley, LL.B., B. A., Volume II., 1869-72. A. & W. Mackinlay, Halifax, N.S., 6th December, 1888.
4577. DECISIONS OF THE SUPREME COURT OF NOVA SCOTIA. Edited by John M. Geldert, Jr., LL.B., and James M. Oxley, LL.B., B. A., Volume III., 1872-75. A. & W. Mackinlay, Halifax, N.S., 6th December, 1888.
4578. THE MERCANTILE TEST AND LEGAL RECORD. Volume XVIII., No. 49. December 6th, 1888 (periodical). Dun, Wiman & Co., Toronto, Ont., 7th December, 1888.
4579. UNE VOIX D'OUTRE TOMBE. Poésies de M. Martineau, P. S. S. avec Portrait. R. J. Devins, Montreal, Que., 10th December, 1888.

4580. MY OWN CANADIAN HOME. Music by T. Morley. Words by E. G. Nelson. Thos. Morley, St. John, N.B., 10th December, 1888.
4581. THE CANADIAN BAPTIST HYMNAL. For the Use of Churches and Families. The Baptist Book and Tract Society, Halifax, N.S., 10th December, 1888.
4582. PERSONAL MEMOIRS OF P. H. SHERIDAN. General United States Army. Volumes I. and II. Andrew Chatto, London, England, 12th December, 1888.
4583. PHOTOGRAPHS OF PETERBOROUGH AND SCENERY IN VICINITY. Marked A (as per application). Geo. B. Sproule, Peterborough, Ont., 12th December, 1888.
4584. PHOTOGRAPHS OF PETERBOROUGH AND SCENERY IN VICINITY. Marked B (as per application). Geo. B. Sproule, Peterborough, Ont., 12th December, 1888.
4585. PHOTOGRAPHS OF PETERBOROUGH AND SCENERY IN VICINITY. Marked C (as per application). Geo. B. Sproule, Peterborough, Ont., 12th December, 1888.
4586. THE TERCENTENARY OF ENGLAND'S GREAT VICTORY OVER SPAIN AND THE ARMADA, 1588-1888. By Rev. James Little, M.A. Rev. James Little, Toronto, Ont., 13th December, 1888.
4587. THE MERCANTILE TEST AND LEGAL RECORD. Volume XVIII, Number 50, December 13th, 1888. Dun, Wiman & Co., Toronto, Ont., 14th December, 1888.
4588. CANADA ILLUSTRATED FROM SEA TO SEA, with Map and 60 Fine Views, together with Historical and Descriptive Review. By G. Mercer Adam, Esq. Wm. Bryce, Toronto, Ont., 14th December, 1888.
4589. AMONG THE MILLET AND OTHER POEMS. By Archibald Lampman. Archibald Lampman, Ottawa, Ont., 14th December, 1888.
4590. CHRISTIAN REUNION. The Hulsean Lectures for 1886. By Rev. John de Soyres. Rev. John de Soyres, St. John, N.B., 15th December, 1888.
4591. THE PRACTICE OF THE SUPREME COURT OF CANADA. By Robert Cassels, Esq., Q.C., and Registrar of the Court. Robt. Cassels, Ottawa, Ont., 15th December, 1888.
4592. THE DOMINION ILLUSTRATED. Volume I., Number 23, 8th December, 1888.
4593. " " " " " 24, 15th " " (Publication), G. E. Desbarats & Son, Montreal, Que., 17th December, 1888.
4594. A FLIGHT TO FRANCE. By Jules Verne (book). The National Publishing Co., Toronto, Ont., 17th December, 1888.
4595. A WITCH OF THE HILLS. By Florence Warden (book). The National Publishing Co., Toronto, Ont., 17th December, 1888.
4596. TANGLED ENDS. By "Esperance" (book). Alice Maud Ardagh, Toronto, Ont., 17th December, 1888.
4597. THE SPIRIT OF SPRING. Song. By Langton Williams, Sydney Ashdown, Toronto, Ont., 17th December, 1888.
4598. GRAND LIVRE POUR FROMAGERIES ET BEURRERIES. J. de L. Taché, Quebec, Que., 17 Decembre, 1888.
4599. LIVRE DE RECEPTION DU LAIT POUR FROMAGERIES ET BEURRERIES. J. de L. Taché, Quebec, Que., 17 Decembre, 1888.
4600. COMPTES DE LAIT POUR FROMAGERIES ET BEURRERIES. J. de L. Taché, Quebec, Que., 17 Decembre, 1888.
4601. LONDON CITY AND MIDDLESEX COUNTY DIRECTORY, 1888-9. Robert Hills, London Ont., 18th December, 1888.
4602. DIX ANS AU CANADA DE 1840 à 1850 (ouvrage historique. Droit d'Autour Temporaire). Josephine Gerin LaJoie, Montreal, Que., 18 Decembre, 1888.
4603. A WINTER TRIP IN SEARCH OF SUMMER (book), E. O. Bickford, Toronto, Ont., 20th December, 1888.
4604. MONA. Song. Words by F. E. Weatherly. Music by Stephen Adams. The Anglo-Canadian Music Publishers' Association, Limited, London, England, 20th December, 1888.
4605. NEVER LAUGH AT LOVE. Song. Words by Mike Boverly. Music by Theo. Marzins. The Anglo-Canadian Music Publishers' Association, Limited, London, England, 20th December, 1888.
4606. LA NUIT DE NOEL. Paroles de J. B. Caouette. Musique de N. Crépault. Napoleon Crépault, Quebec, Que., 23 Decembre, 1888.
4607. TENNIS WALTZES. By Lily McMartin. Levi F. Sollick, Morrisburg, Ont., 21st December, 1888.
4608. A PRAYER FOR GUIDANCE. By Miss Bella Clark (book). Archer Green Watson, Manager, Toronto. Willard Tract Depository (Limited), Toronto, Ont., 22nd December, 1888.

4609. THE MERCANTILE TEST AND LEGAL RECORD. Volume XVIII. Number 51. December 20th, 1888. Dun Wiman & Co., Toronto, Ont., 22nd December, 1888.
4610. THE RANGERS QUICK MARCH. By T. Hurst. Thomas Hurst, Toronto, Ont., 24th December, 1888.
4611. THE LIVES OF THE JUDGES OF UPPER CANADA AND ONTARIO, from 1791 to the present time. David B. Read, Toronto, Ont., 26th December, 1888.
4612. COLONEL QUARITCH, V.C. A Tale of Country Life. By H. Rider Haggard. Hunter Rose & Co., Toronto, Ont., 26th December, 1888.
4613. ONE MISTAKE. A Manitoban Reminiscence. By Zero. The Canada Bank Note Engraving and Printing Co. (Limited), Montreal, Que., 26th December, 1888.
4614. CODE DE L'INSTRUCTION PUBLIQUE DE LA PROVINCE DE QUEBEC. Paul de Cazes, Quebec, Que., 27 Decembre, 1888.
4615. THE MERCANTILE TEST AND LEGAL RECORD, Volume XVIII. Number 52, December 27th, 1888. Dun, Wiman & Co., Toronto, Ont., 28th December, 1888.
4616. BIRD'S-EYE VIEW OF LIFE INSURANCE AND MATHEMATICAL AND LOGICAL EXPOSITION OF THE LEVEL PREMIUM PLAN. King Bruce, Toronto, Ont., 29th December, 1888.
4617. L'ENCHANTERESSE. Valse Brillante, par R. Gruenwald. Edmond Hardy, Montreal, Que., 29 Decembre, 1888.
4618. PLEASANT ARE THY COURTS ABOVE. Anthem, Hymn 240. Music by F. G. Plummer. A. & S. Nordheimer, Toronto, Ont., 31st December, 1888.
4619. MARGUERITE. Valse. By J. A. Barnaby. I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4620. PARISIAN LANCERS. By Henry Bourlier. I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4621. IN THE PARK. Morceau de Salon. Par C. A. E. Harriss. I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4622. SONATINA. Op. 54. By Ernest Gunther. I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4623. WILT THOU FORGET. Song. Words by Wetherell Draper. Music by C. A. E. Harriss. I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4624. THE "ELITE" WALTZ. By Otto Roeder. I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4625. HEART AND HAND. Polka Mazurka. By John Post. I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4626. HEART AND HAND. Polonaise. By John Post. I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4627. WHAT TO-MORROW BRINGS. Song. Words by A. Wetherell Draper. Music by C. A. E. Harriss. I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4628. MARCHE CANADIENNE. By Gilbert King. I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4629. ON THE WING. By Gilbert King (Musical Composition). I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4630. PLUIE D'ETOILES. Polka brillante. By Charles A. E. Harriss. I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4631. MARRIAGE BELLS. Gavotte Romantique. By Charles A. E. Harriss. I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4632. DANSE POLONAISE. By Rudolf King. I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4633. MAY PLEASURES (Maieenlust). By C. Gurlitt (Musical Composition). I. Suckling & Sons, Toronto, Ont., 31st December, 1888.
4634. THE LIGHT OF LANGUAGE, or How to Hear and Read Aright. By Wm. Jackson. Wm. Jackson, Toronto, Ont., 31st December, 1888.
4635. THE GERRARD STREET MYSTERY, and other Weird Tales. By John Charles Dent. Hunter Rose & Co., Toronto, Ont., 31st December, 1888.

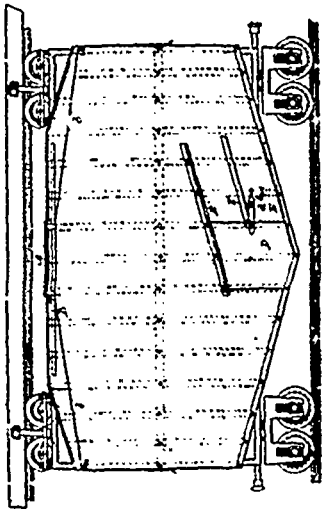
THE
CANADIAN PATENT OFFICE RECORD.

ILLUSTRATIONS.

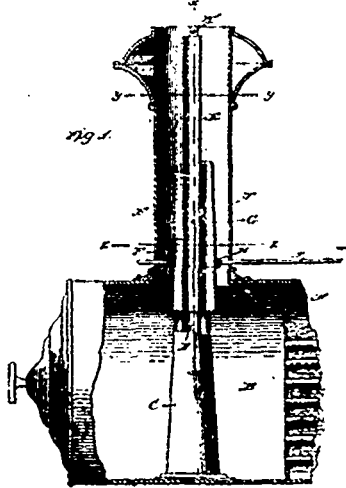
Vol. XVI.

DECEMBER, 1888.

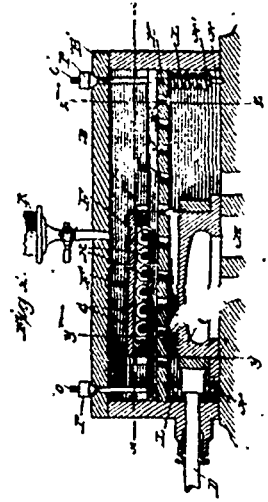
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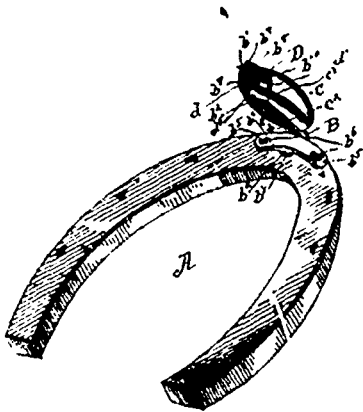
30306 Boynton's Railway.



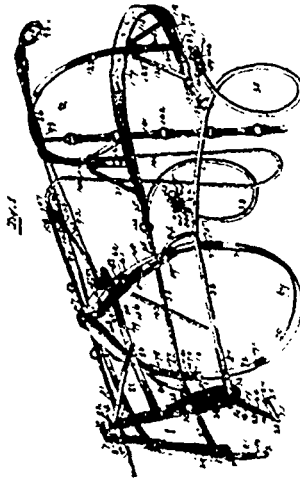
30307 Lee's Exhaust Nozzle Extension.



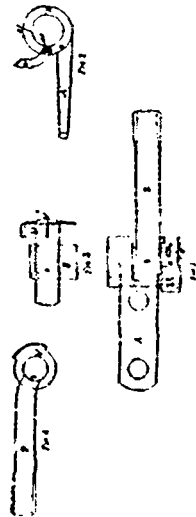
30308 Lee's Roller Valve.



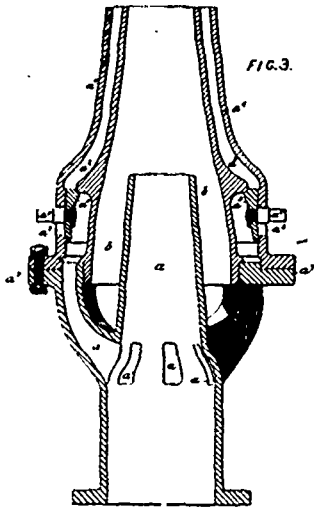
30309 Crannell's Toe Weight.



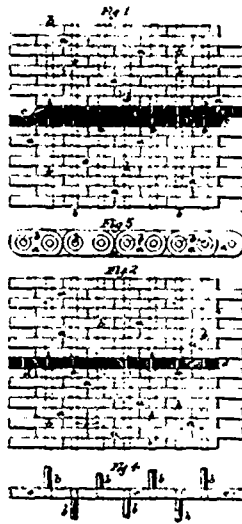
30310 Tourgée's Harness



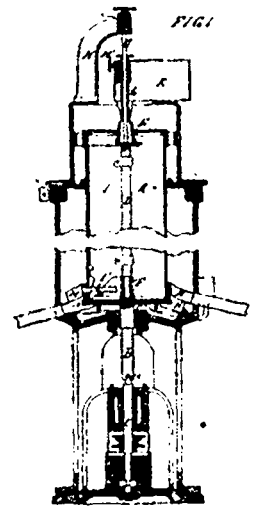
30311 Brownlee's Thill Coupling



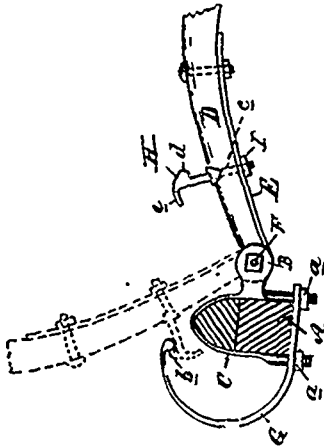
30312 Appleby's Blast Pipe.



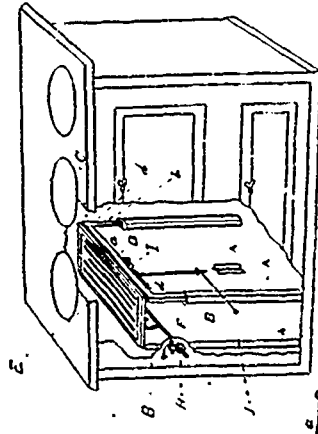
30313 Brock's Machine Bolting.



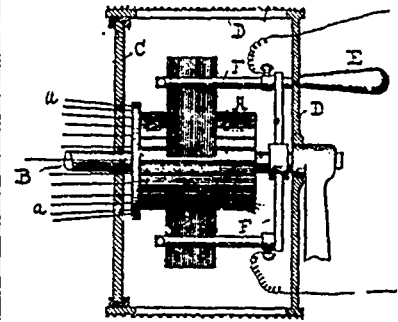
30314 Jonsson's Cream Separator.



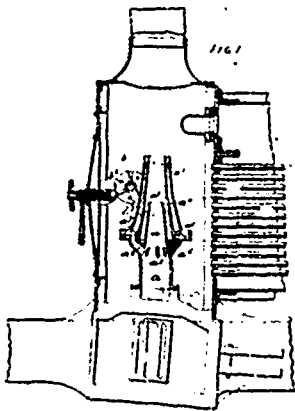
30315 Linney's Thigh Support.



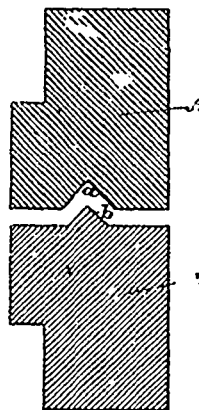
30316 Gilman's Furnace, Cooking Range, etc.



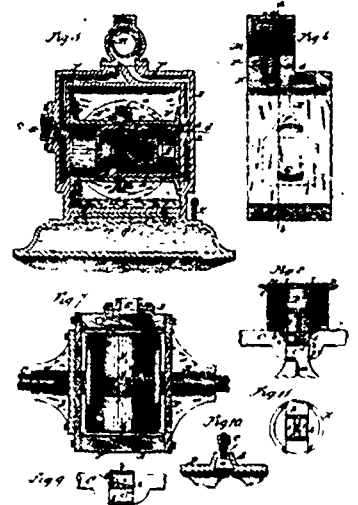
30317 Tacy's Dynamo Electrical Machine.



30318 Appleby's Blast Pipe, etc.



30319 Rothwell's L-shaped Spring.



30320 Swain & Worth's Steam Engine.



Fig. 1

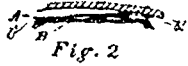


Fig. 2

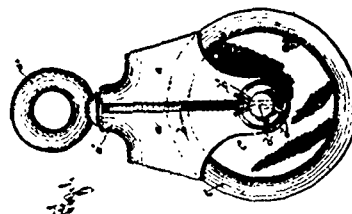
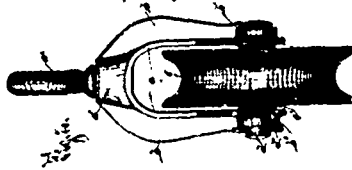


Fig. 3

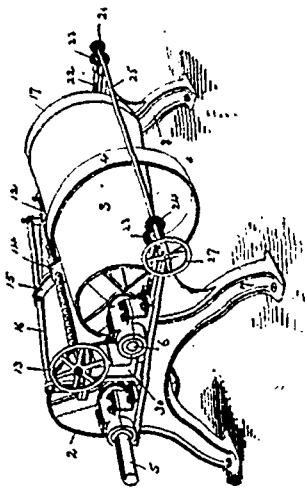


Fig. 4

39321 Chapdelaine's Boot and Shoe Clasp.



39322 Stearns' Pulley.



39323 Evans' Mechanism for Transmitting Motion



Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.

39324 Stitt's Machine for Fastening Traces.

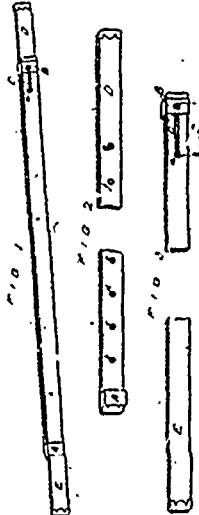


Fig. 1.



Fig. 2.

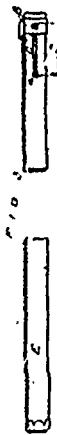


Fig. 3.

39325 Macdonald's Dress Extender

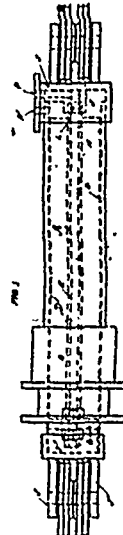


Fig. 1.



Fig. 2.

39326 Lawrence's Power Machine.

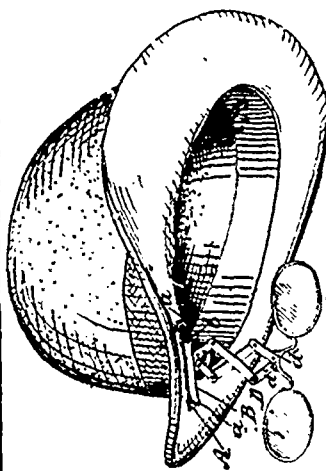
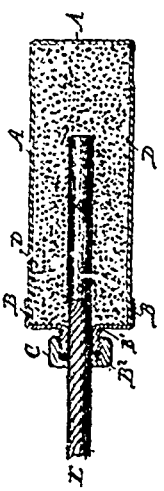


Fig. 1.

39327 Brownlow and Warner's Attachment of Eye-Glasses



39328 Butterfield & Batchelor's Cartridge Case.

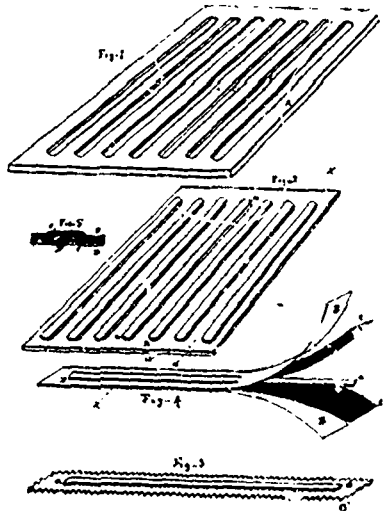


Fig. 1.

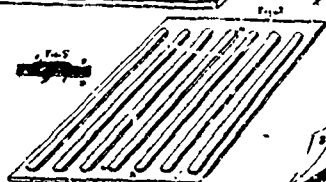


Fig. 2.

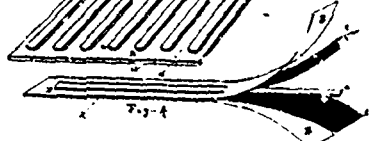
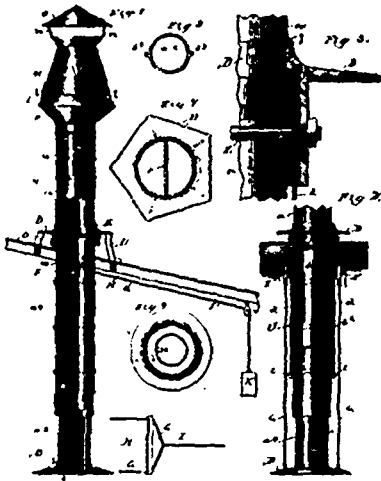
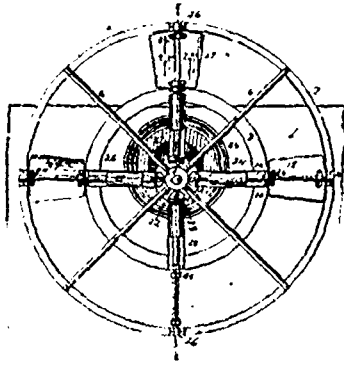


Fig. 3.

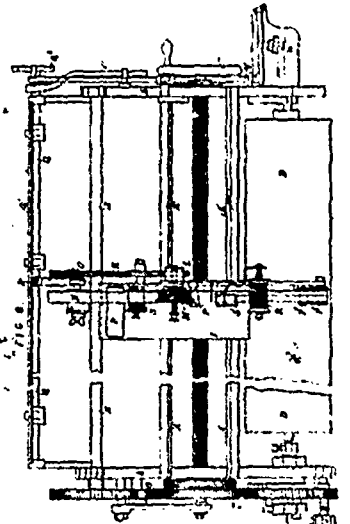
39329 Dowling's Stay for Garments.



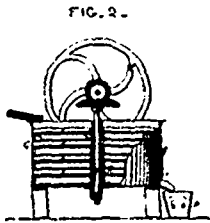
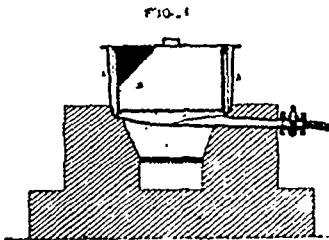
30330 Roo's smoke Stack.



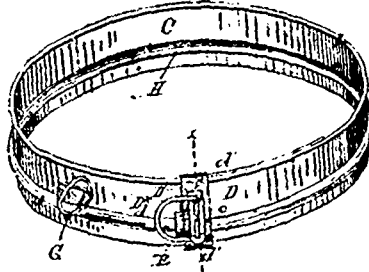
30331 Blasjer's Paddle Wheel.



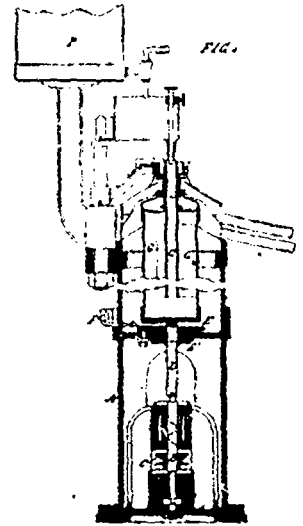
30332 Tusaud's Applying Bar, etc, to Woven Fabrics, etc.



30333 Ploot's Washing or Bleaching Cake or Powder.



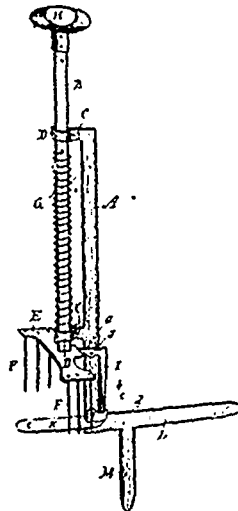
30334 Crawford's Pie Plate Rim.



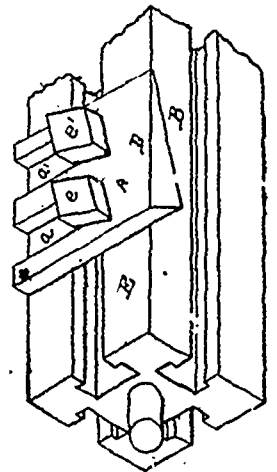
30335 Jonson's Cream Separator.



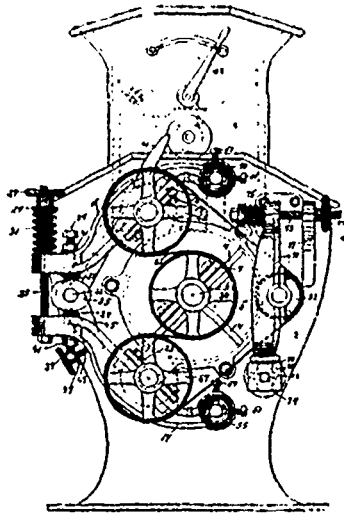
30336 Spencer's Two Wheeled Vehicle.



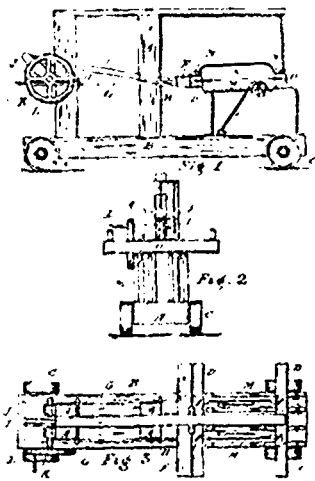
30337 Wherry's Mole Trap.



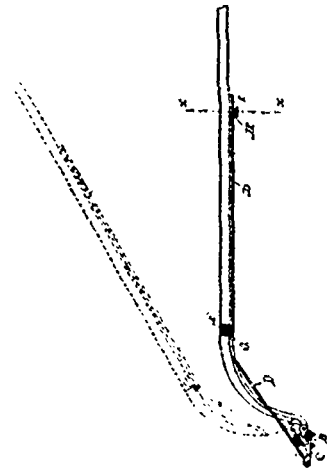
30338 Dumontier's Knife for Planting Machines.



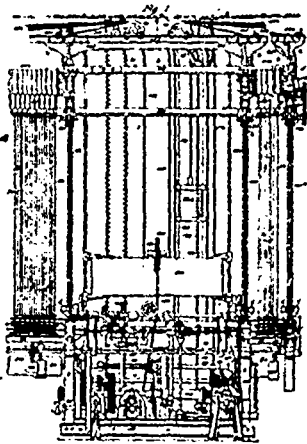
30333 Willford's Three Roller Grain Mill.



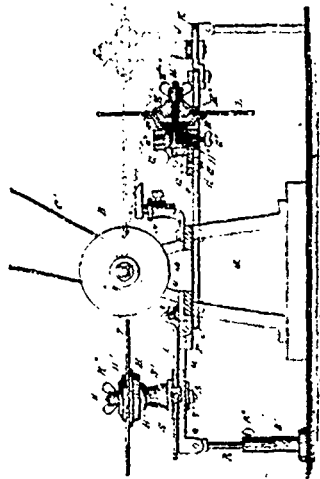
30340 Davis' Machine for Sawing Wood.



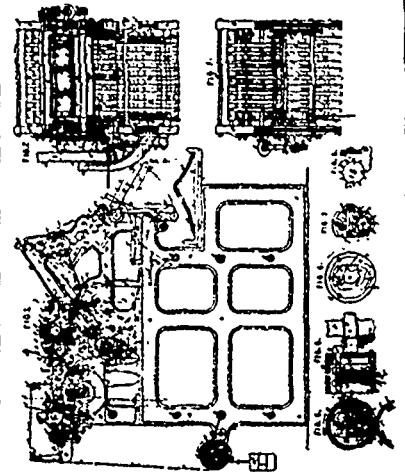
30341 Powers' Shaft Support.



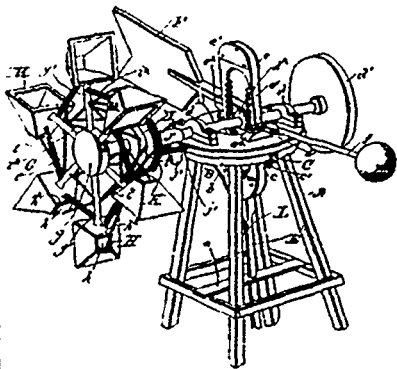
30342 Bardwell's Mule Spliner.



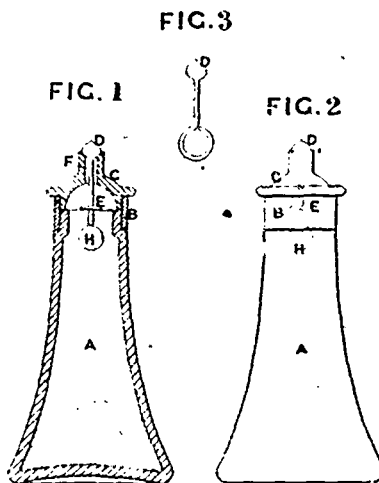
30343 Mealey's Circular Saw Sharpener, etc.



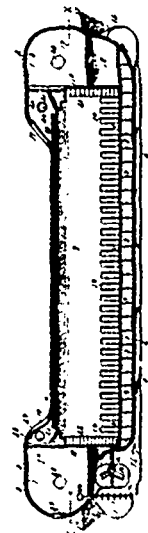
30344 Carlaw's Printing and Numbering Machine.



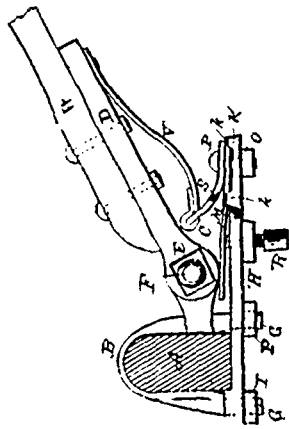
30345 Nagel's Wind Mill.



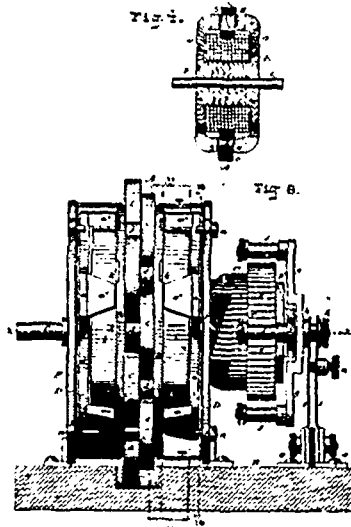
30346 Boston's Bottle Stopper.



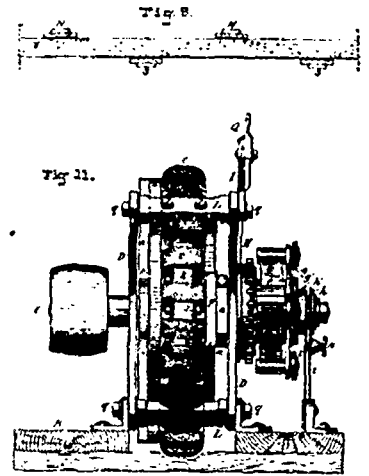
30347 Wright's Life Boat



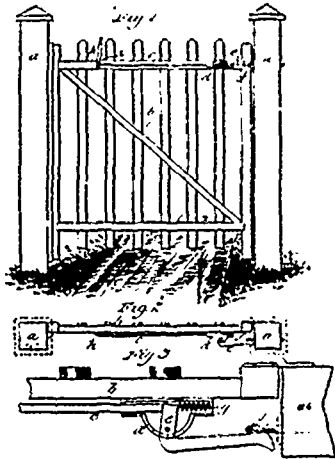
30348 Powers' Thrill Coupling.



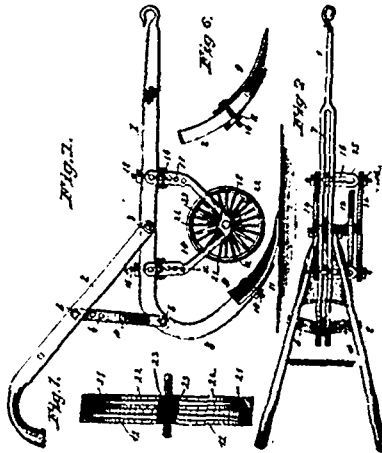
30349 Main's Dynamo Electric Machine, etc.



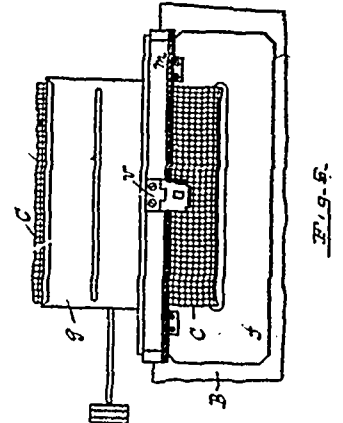
30350 Main's Electro Motor, etc.



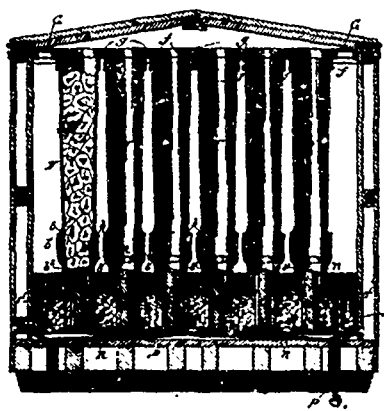
30351 Coffey's Fastening for Gates.



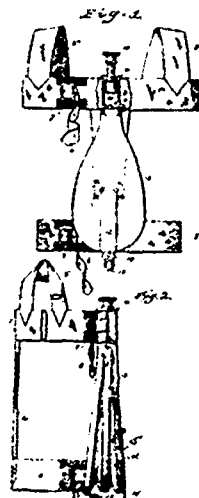
30352 Cunningham's Cultivator.



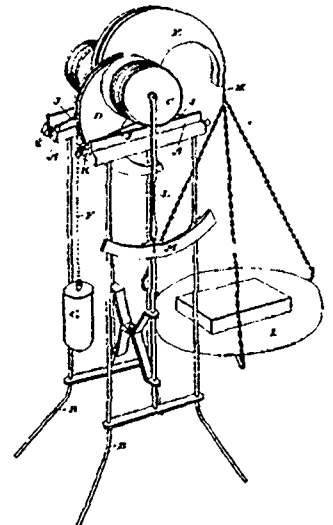
30353 Tooley's Lamp.



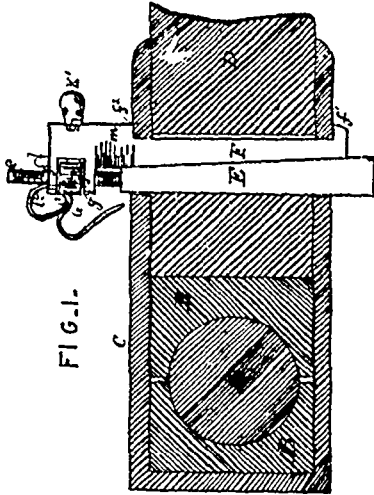
30354 Bosmann's Refrigerator Car.



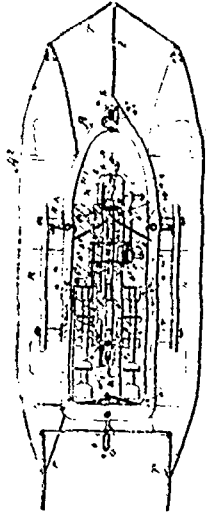
30355 Pemberton's Life Preserver.



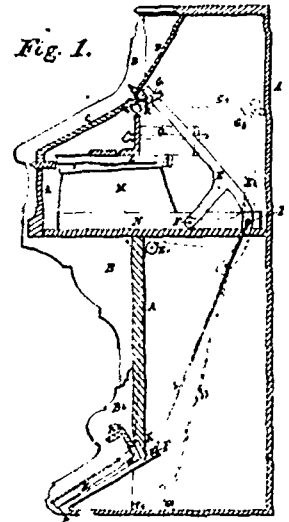
30356 Delko's Weigh Scale.



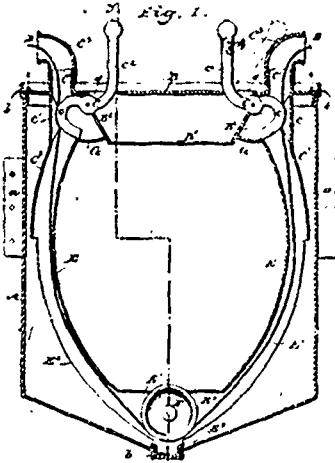
33357 Young's Gib and Key.



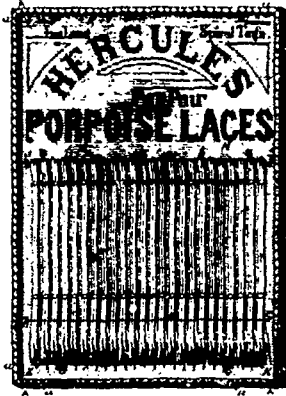
33253 Adams' Propeller.



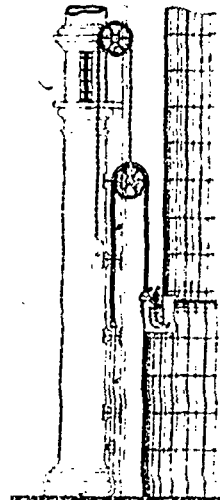
33353 Chute's Operation of Reed Organs.



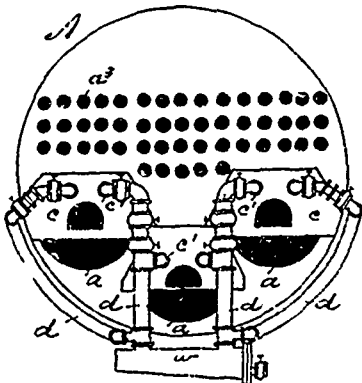
33363 McCole's Twine Roller for Self-Binding Reapers



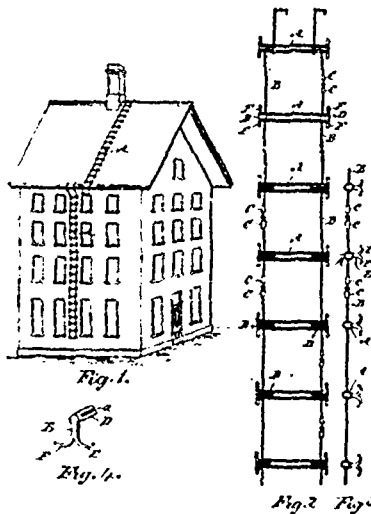
33351 Paton's Show Case Holder.



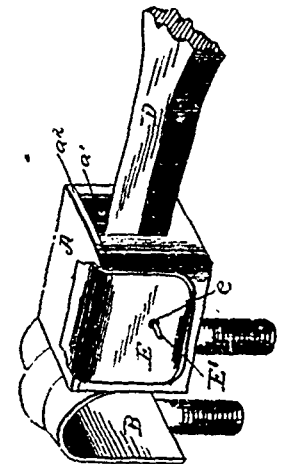
30362 Cutler's Apparatus for Supplying Steam or Fluid to the Cups of Telescopic Gas Holders.



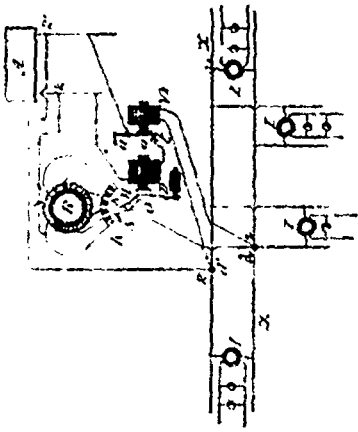
33363 Erhard's Steam Generator.



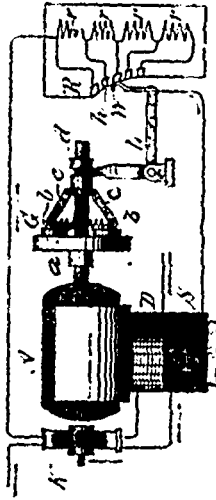
33361 Cass' Ladder



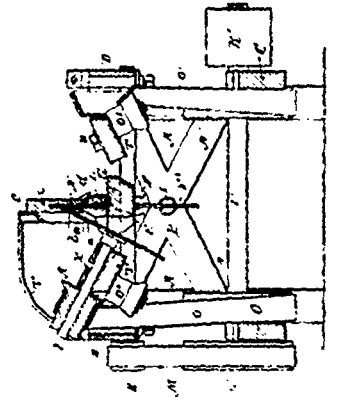
33865 Blackman's Thill Couplings.



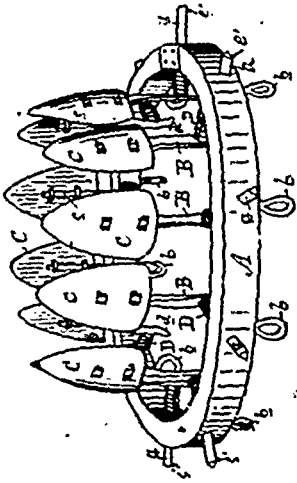
33366 Rice's System of Electrical Distribution.



33367 Thomson's Electric Motor.



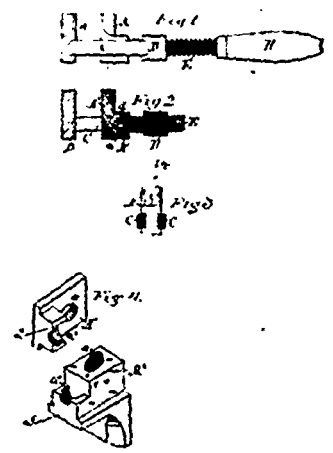
33368 Biigel's Machine for Sawing Pickets.



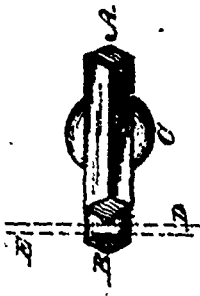
33369 Lyons' Hat Conformator, etc.



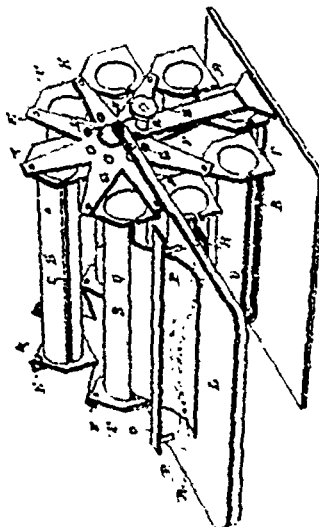
33370 Codd's Machine for Sharpening Slate Pencils.



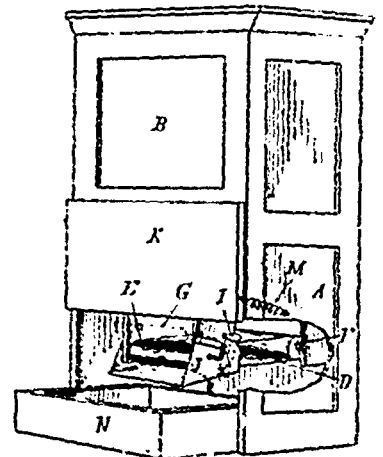
33371 Lancaster's Wrench.



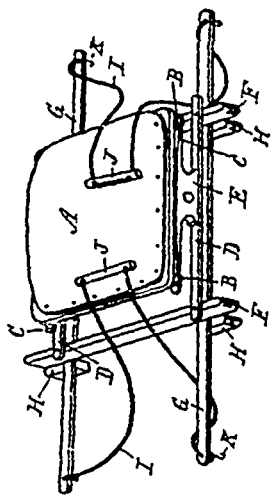
33373 Woolly's Harness Terret.



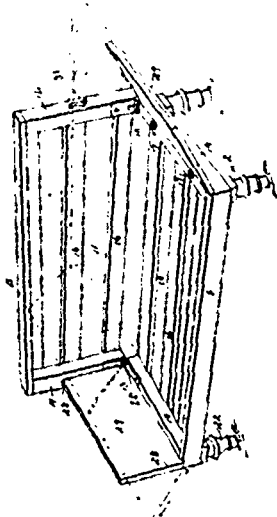
33374 Doorfinger's Apparatus for Storing and Measuring Dry Goods, etc.



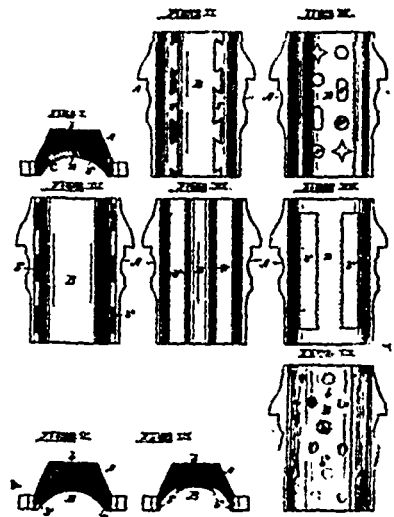
33375 Parrish's Cracker Box.



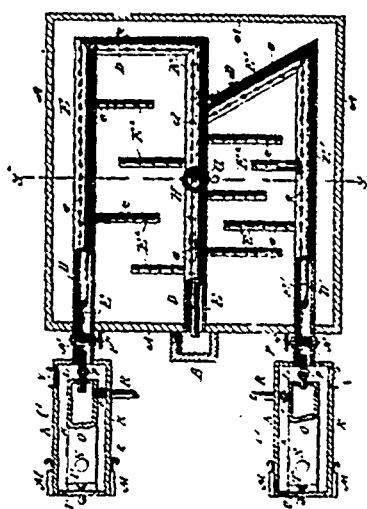
33371 Rice's Lifting Machine.



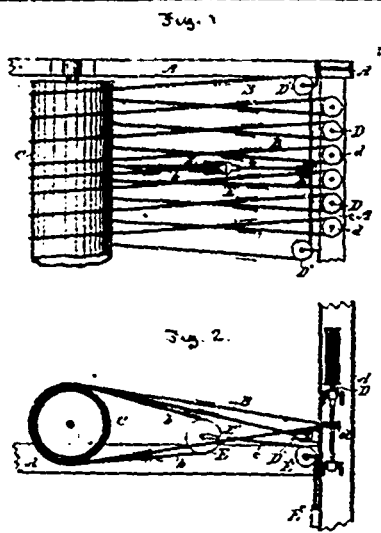
33377 Skinner's Sofa Bed.



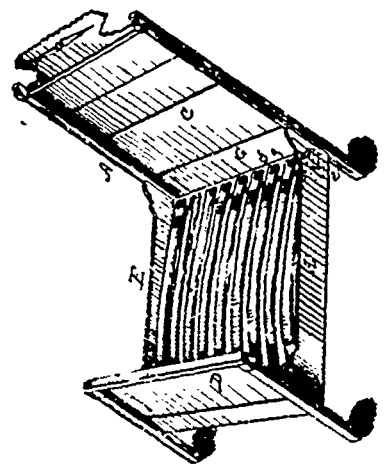
33378 Garratt's Journal Bearing.



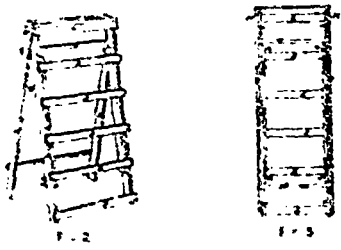
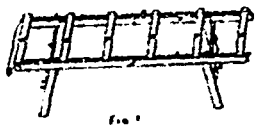
33379 Hardeu's Tobacco Curing Apparatus.



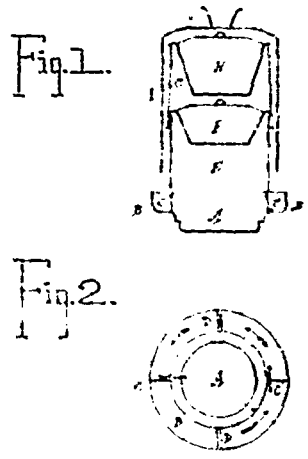
33381 Jones' Apparatus for Driving the Spindles in Machinery for Spinning, etc.



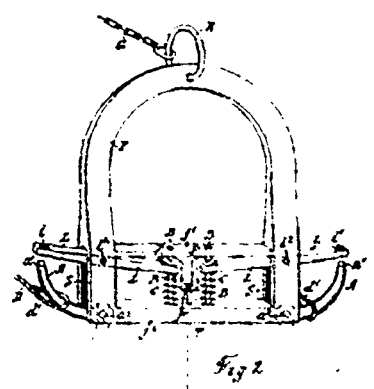
33382 Flohr's Spring Bed.



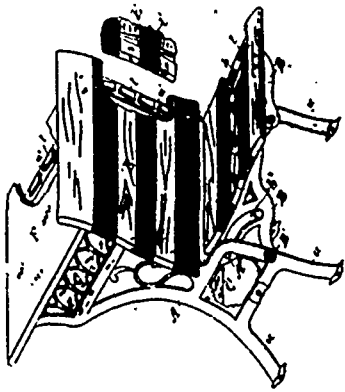
33383 Lambertson's Wash Tub Stand and Step Ladder



33384 Whitelaw's Steam Cooker



33385 Johnson's Sheaf Carrier



30386 Pergrine's School Desk and Seat.

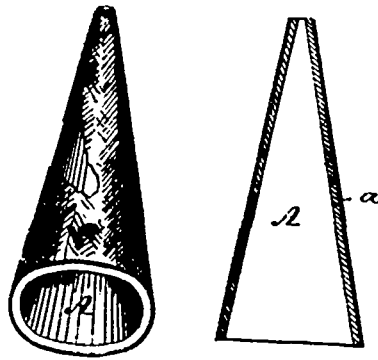
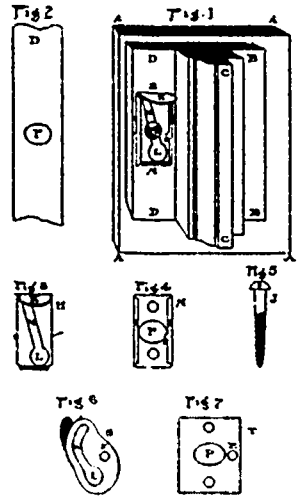
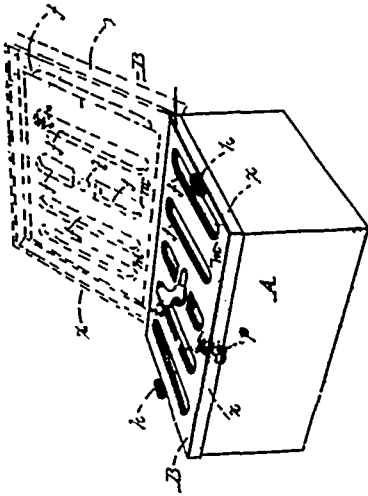


Fig. 1. Fig. 2.

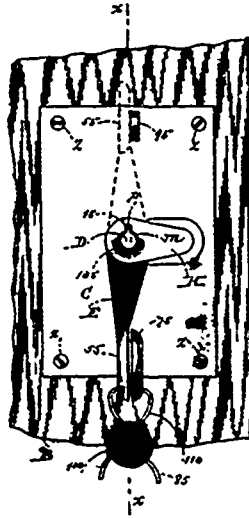
30387 Muttall & Cudlip's Cone Tube.



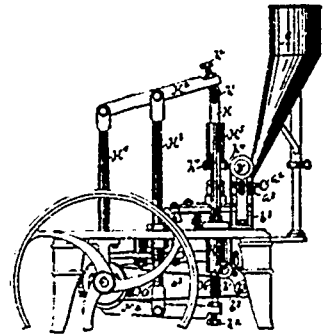
30388 Mott's Window Stop and Sash Fastener.



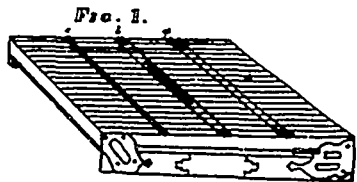
30389 Hicknell's Heater



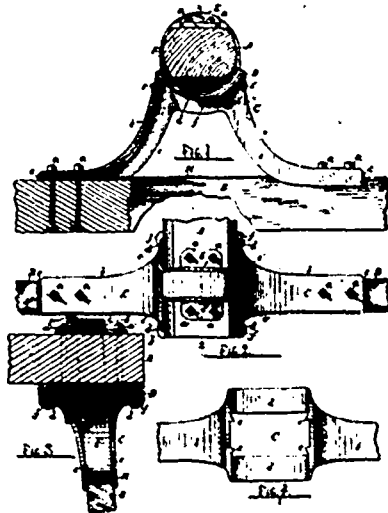
30390 Strang's Lock.



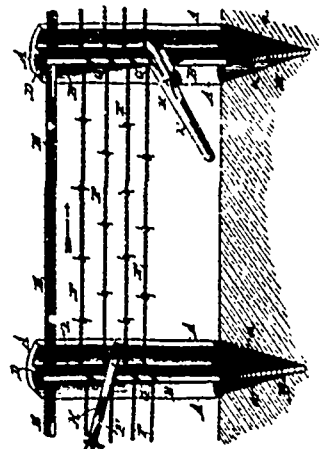
30391 Tulin & Piatkowski's Apparatus for Compressing Drugs, etc.



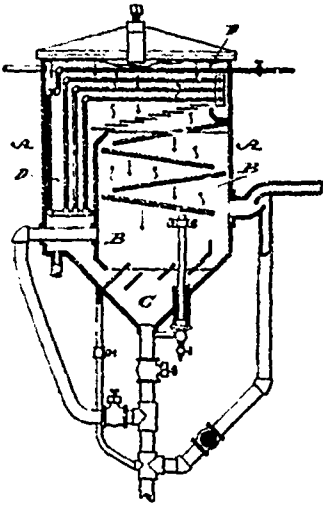
30342 Tye's Attachment to Wire Beds.



30393 Moulton & Remple's Sleigh Knob.



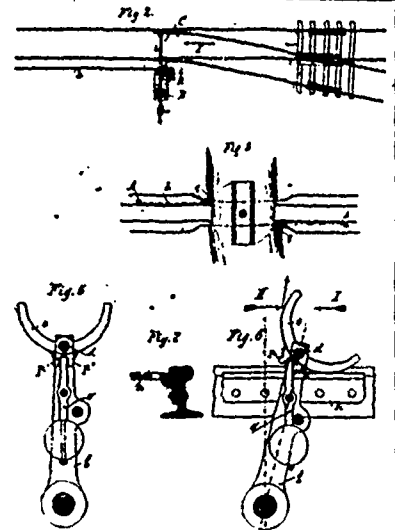
30334 Higgins & Sullivan's Fence Post



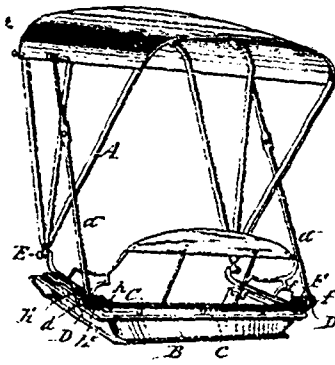
30395 Webster's Process of Purifying Water



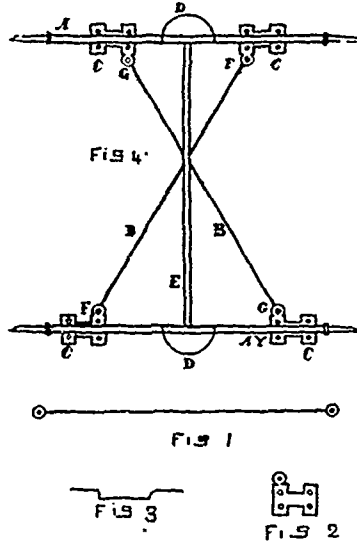
30396 Richard's Shaft Carrier



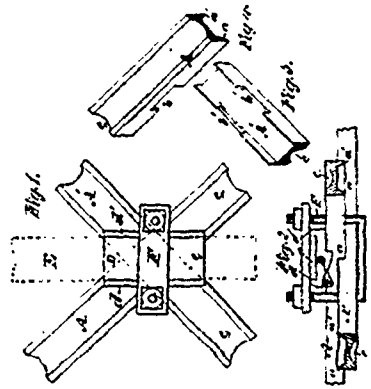
30397 Held's Device for Preventing Collisions on Railways.



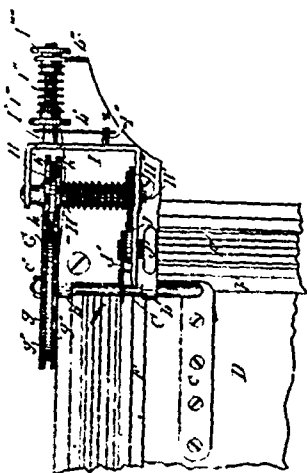
30398 Cately's Carriage Top Spring.



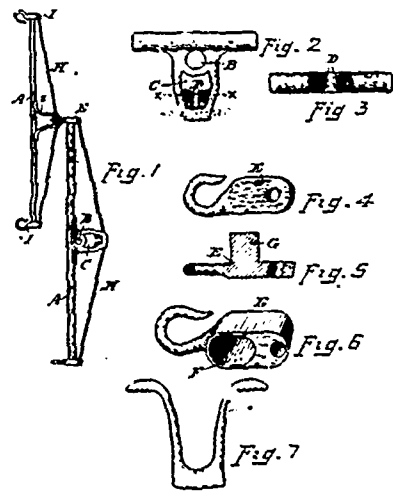
30399 Peckham's Vehicle Gear.



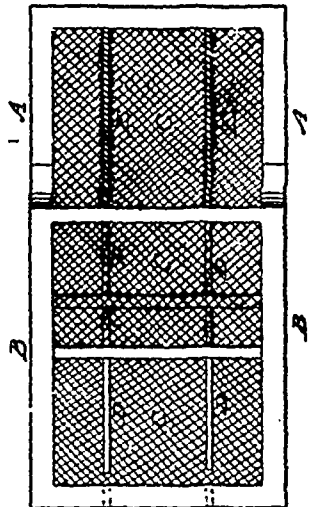
30400 Gillies' Harrow.



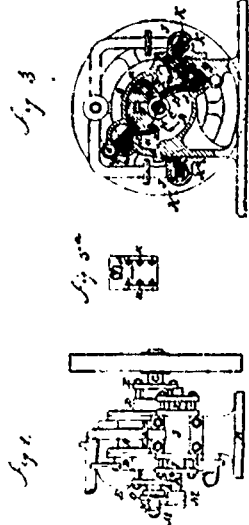
30401 Marrison's Door Closer



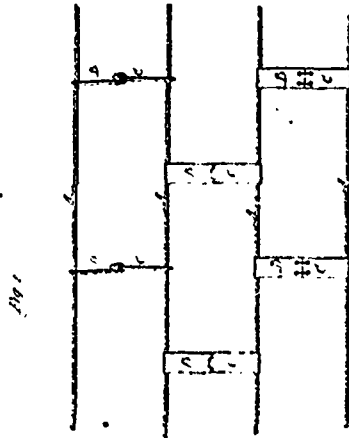
30402 Hiscoll's Whiffletree



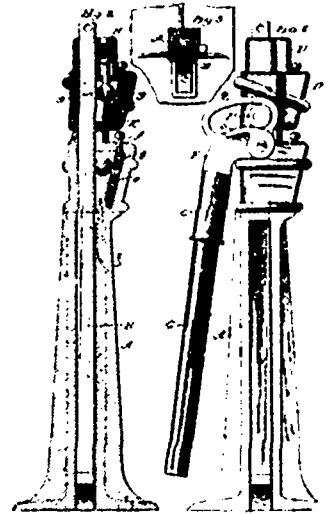
30403 Quackenbush's Window Screens.



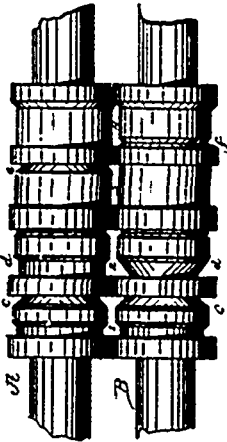
30404 Brown's Rotary Engine.



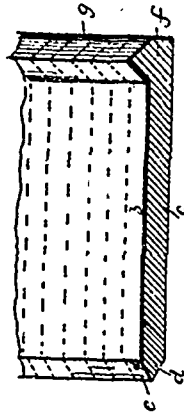
30405 Duncan's Guard for Wire Fences.



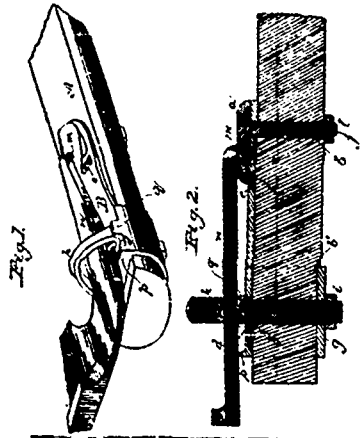
30406 Crecolius' Lifting Jack.



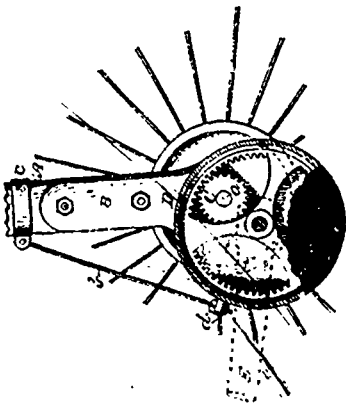
30407 Jones' Railway Spike.



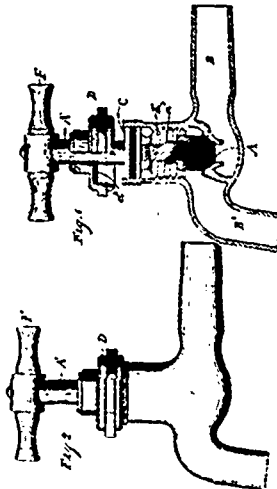
30408 Jones' Blank for Railway Spikes.



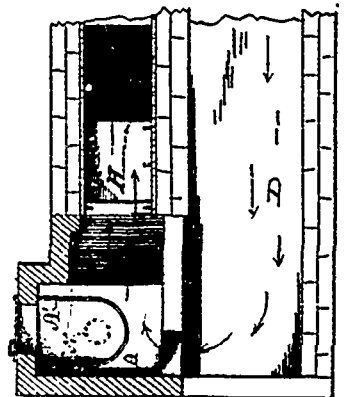
30409 Edwards' Scythe Fastener.



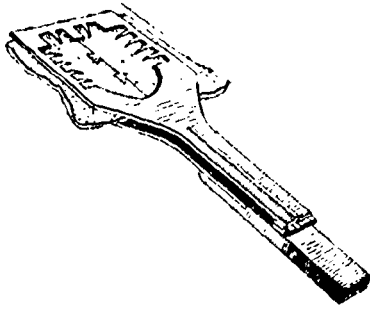
30410 Spenser's Bicycle.



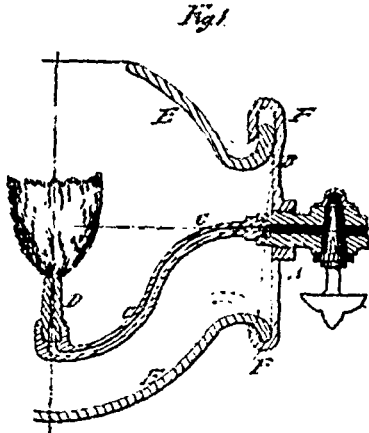
30411 Hyde's Water Tap.



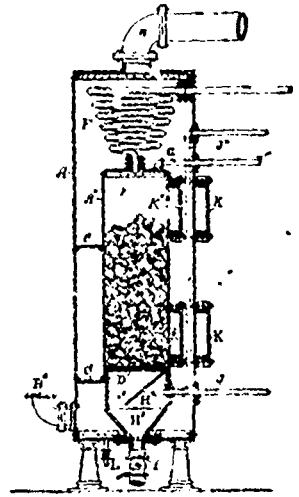
30412 Short's Dry Closet.



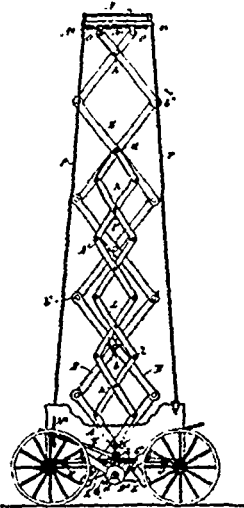
30414 Cotton's Sole and Heel



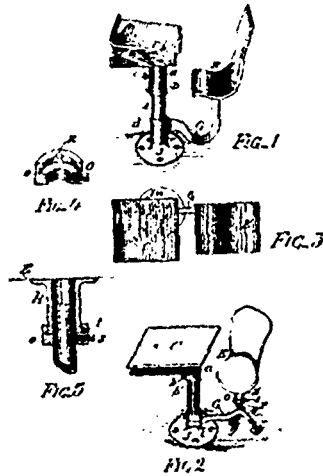
30415 Fox's Globe and Shade for Gasaliers, etc.



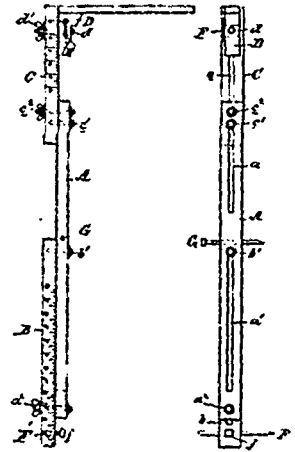
30416 Stark's Feed Water Heater, etc.



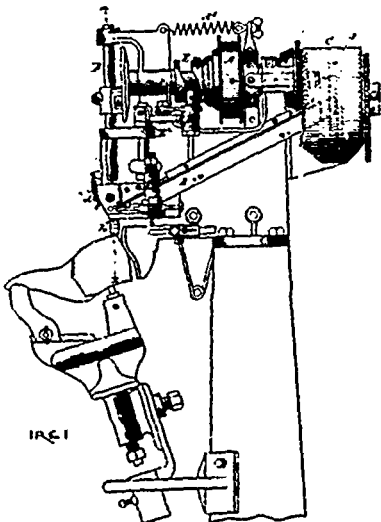
30417 Ste. Marie's Fire Escape.



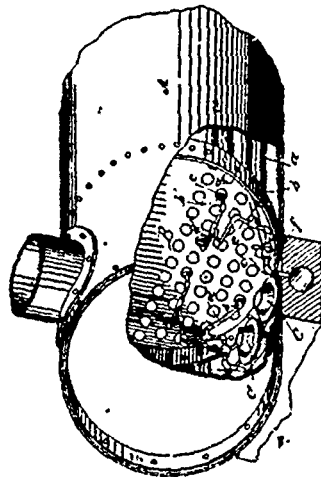
30419 Canada's School Desk and Seat.



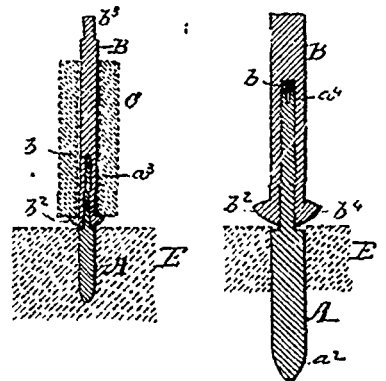
30420 Driscoll's Measuring Rod.



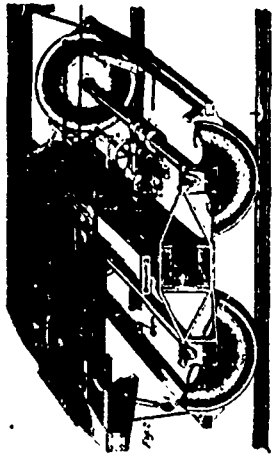
30421 Woodward's Tack Driving Machine.



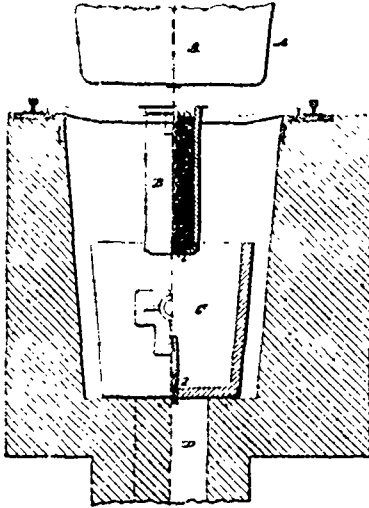
30422 Smith's Friction Engine



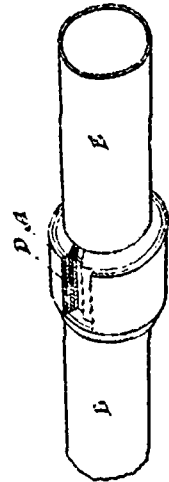
30423 Church's Piano Key Levelling Pin.



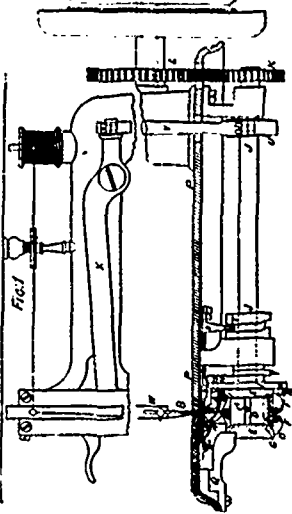
30424 Widdifield & Bowman's Electric Brake.



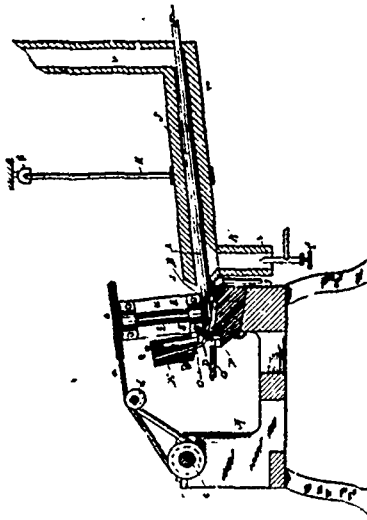
30425 Darby's Manufacture of Steel or Iron.



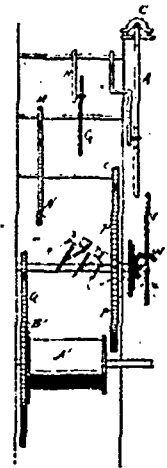
30426 Keith's Pipe Joint.



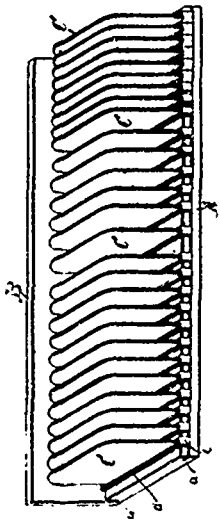
30427 Moss & Hunt's Sewing Machine.



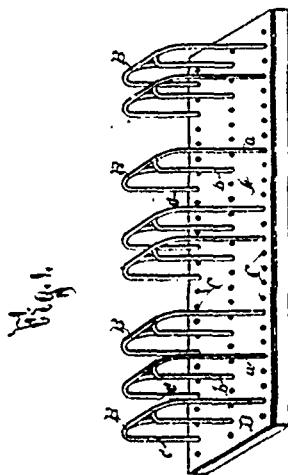
30428 Jones' Machine for Making Nails, etc.



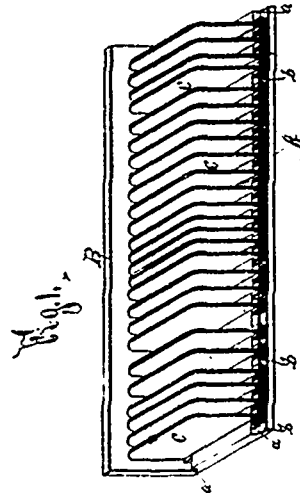
30429 Hess' Tower Clock.



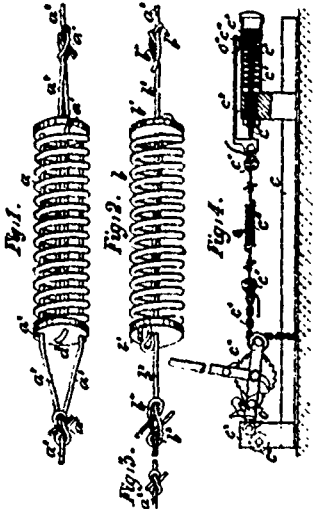
30430 Wells' Paper or Bill File



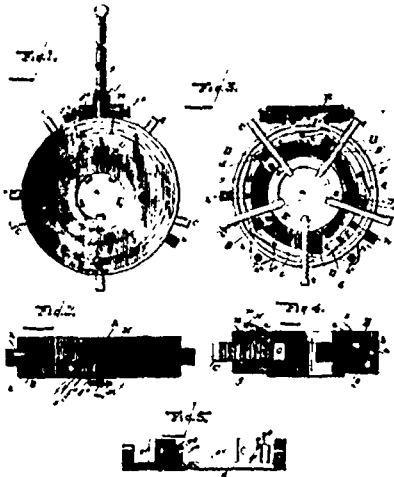
30431 Wells' Paper or Bill File



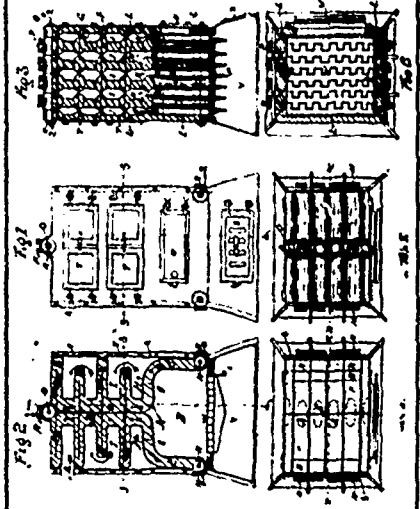
30432 Wells' Paper or Bill File



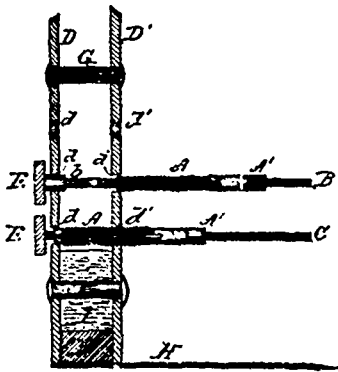
30433 Evans' Apparatus for Regulating the Tension of Fencing Wires, etc.



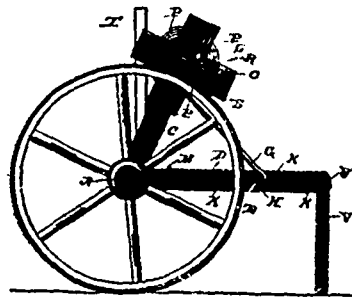
30434 Virglen's Pipe Threading Die.



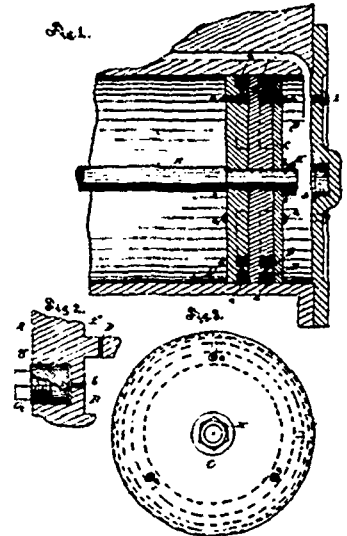
30435 Not's Hot Water Boiler for Heating.



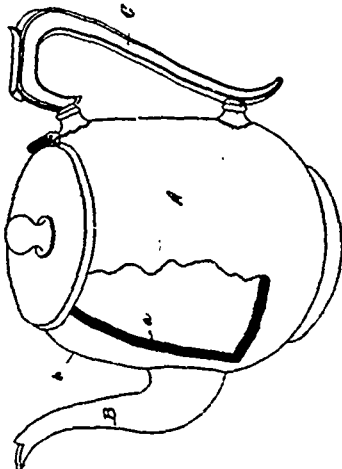
30436 Connolly's Screw Tap, etc.



30439 Whitten's Machine for Reeling and Unreeling Wire.



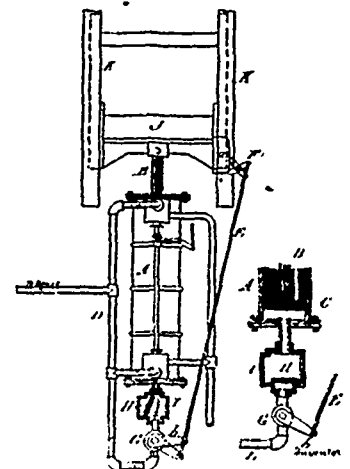
30440 Steen & McDonald's Piston Head



30441 Furniss' Tea & Coffee Pots, etc.



30442 Low's Instrument for Milking Cows, etc.



30443 Smith's Cushioning Device for Steam Pistons.

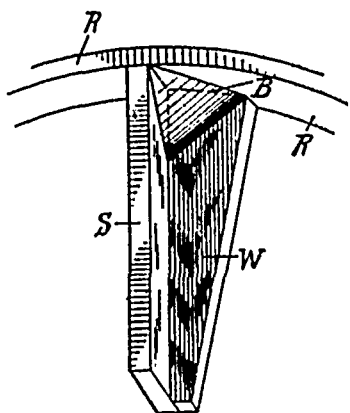


Fig. 2.

30444 Magee's Winged Spoke Wheel

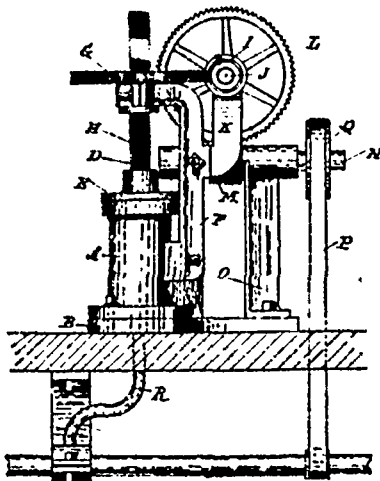
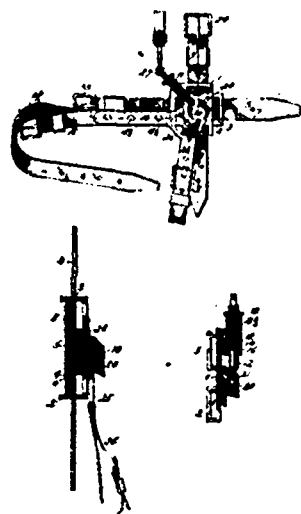


Fig. 1

30445 Stairs' Oiler.



30446 Coolidge's Harness Attachment.

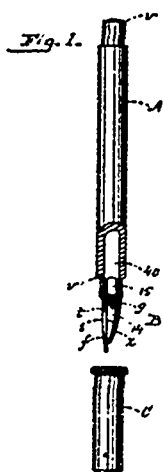


Fig. 1.

30447 Wilcox's Fountain Pen

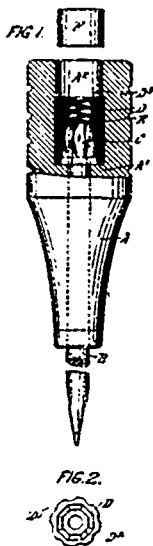


FIG. 1.

FIG. 2.

30448 Chantrell's Screw Driver.

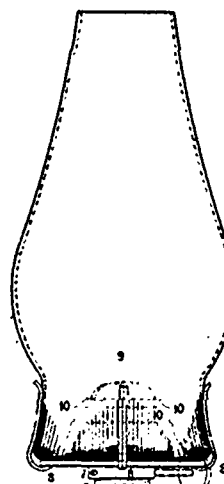
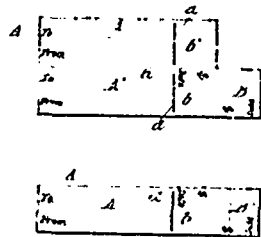
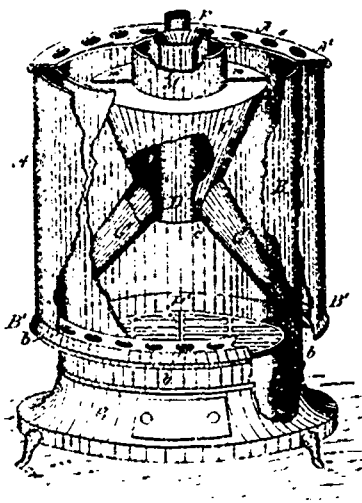


fig. 2

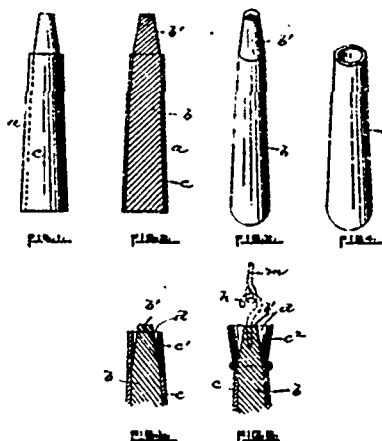
30449 Raddin's Lamp Chimney.



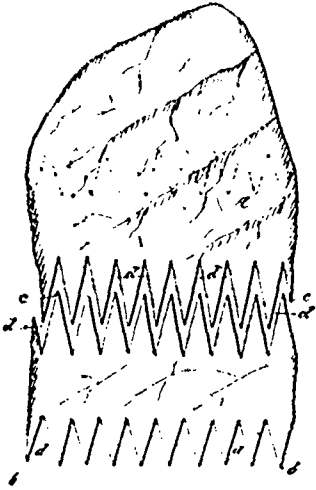
30450 Sprague's Tag for Money Bags, etc.



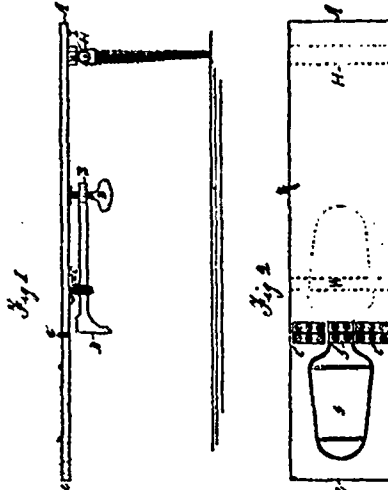
30451 Green's Air Heating Stove



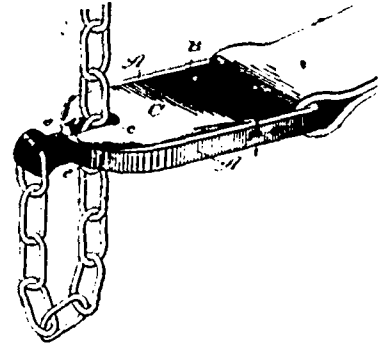
30452 Burdon's Ingot for Making Seamless Plated Wire.



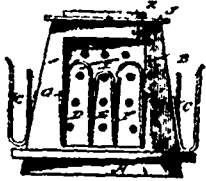
30453 Smith's Method of Preparing Tobacco for Cigars.



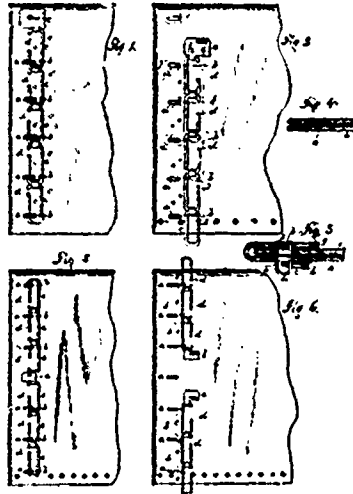
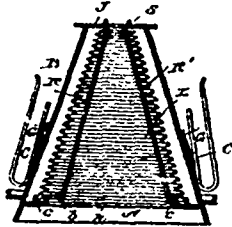
30454 Emery's Ironing Board.



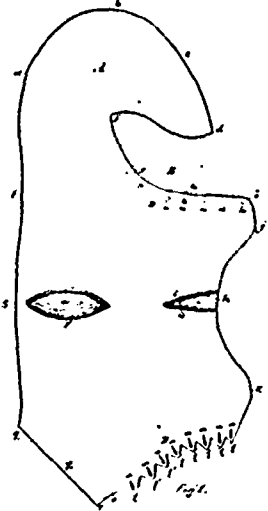
30455 Conkey's Buckle.



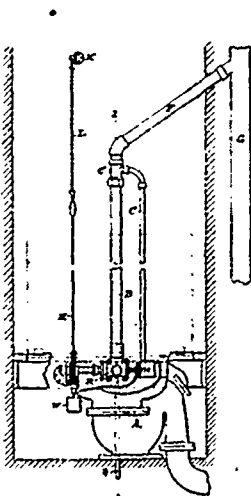
30456 Harkins & Willis' Bread Toaster.



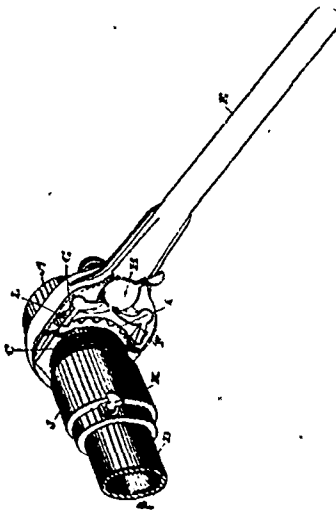
30457 Gordon's Mail Bag Fastening.



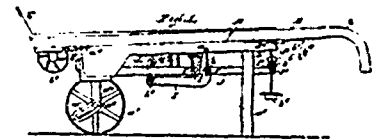
30458 Durocher's Boot and Shoe Vamp.



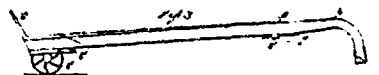
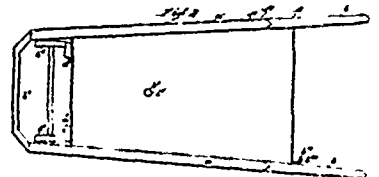
30459 Elmdorff's Water Closet.



30460 Brown's Screw-Cutter.

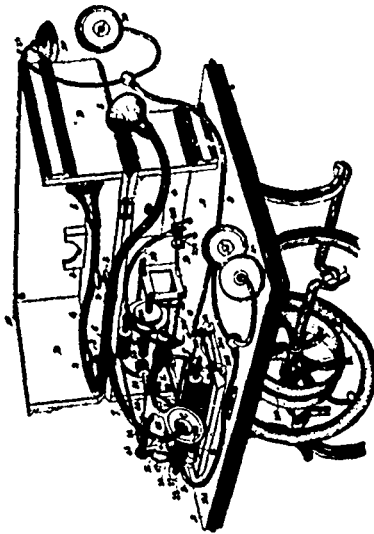


30461 James' Truck and Weighing Scales.

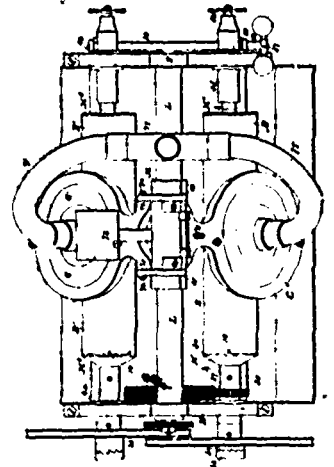




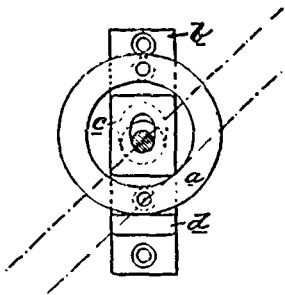
30463 Lusk's Respirator.



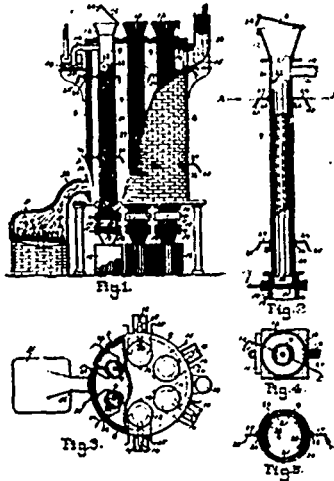
30464 Tainter's Graphophone



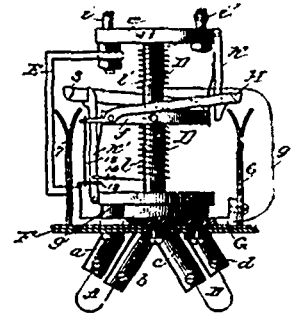
30465 Tainter's Graphophone.



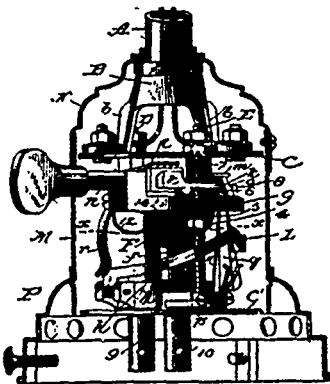
30466 Haines' Fittings for Dressing and Cheval Glasses, etc.



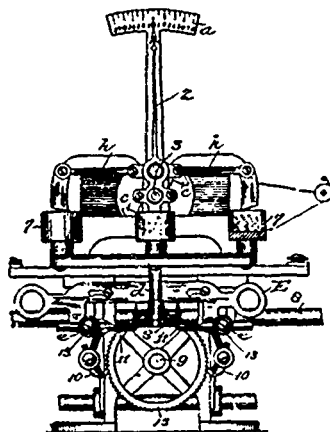
30467 Eames' Device for Refining Metallic Ore.



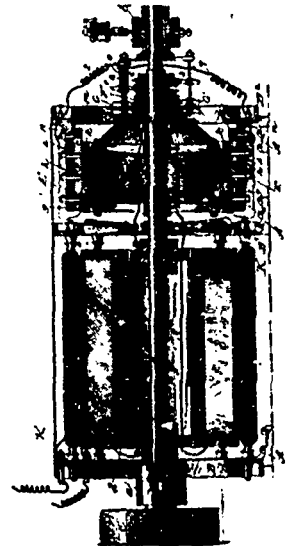
30468 Heisler's Electric Lamp Holder, etc.



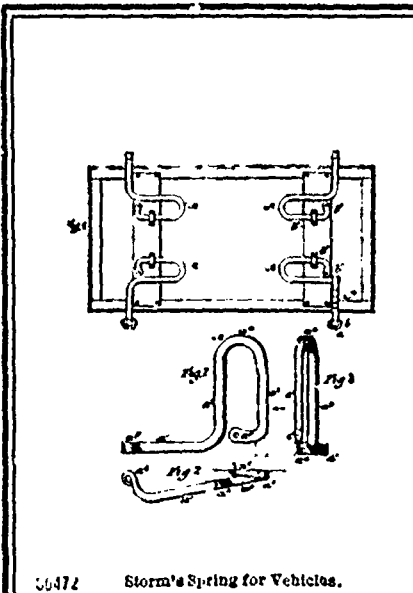
30469 Heisler's Electric Lamp Holder, etc.



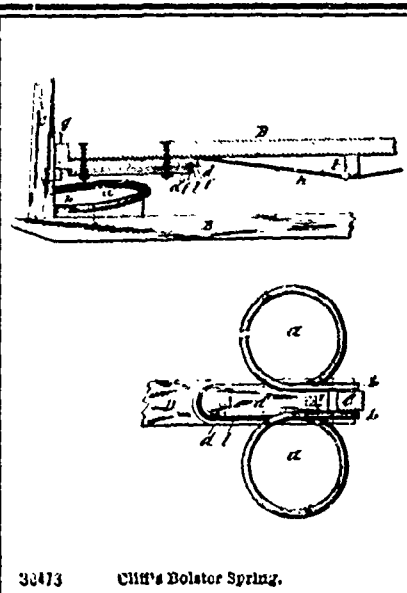
30470 Heisler's Regulator for Dynamo Electric Machines.



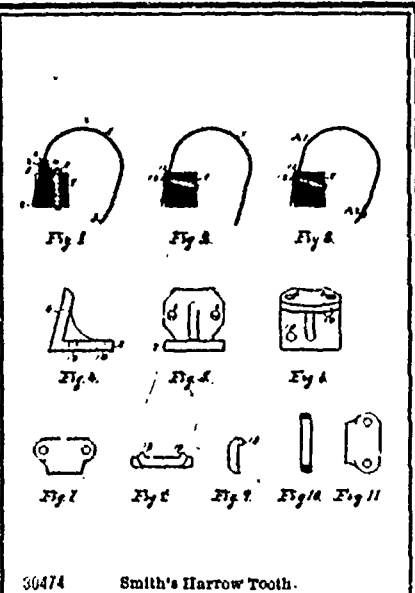
30471 Heisler's Dynamo Machine.



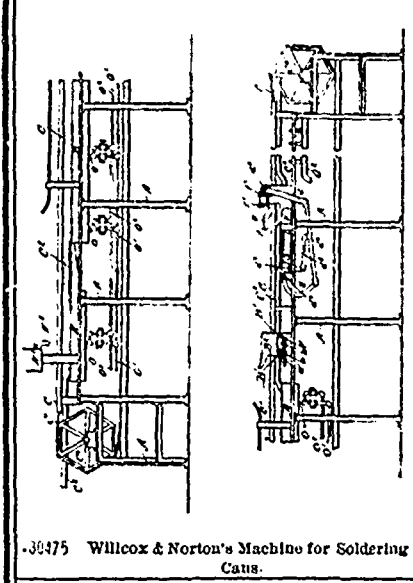
30472 Storm's Spring for Vehicles.



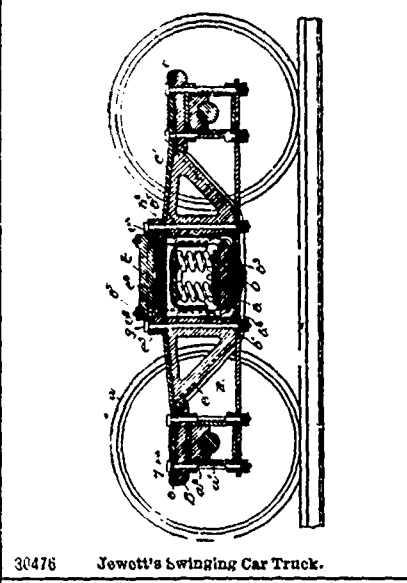
30473 Chitt's Dolster Spring.



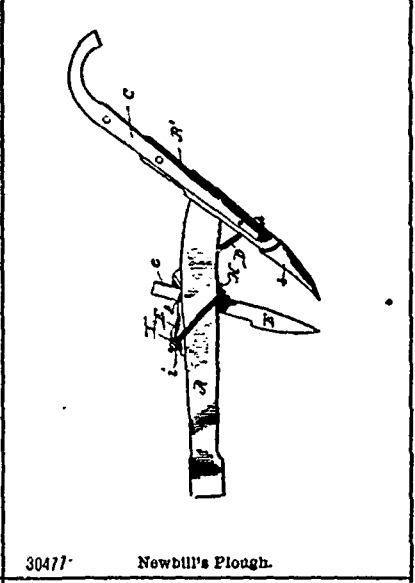
30474 Smith's Harrow Tooth.



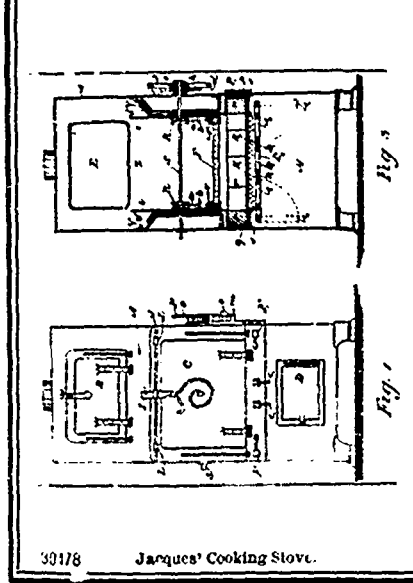
30475 Willcox & Norton's Machine for Soldering Cans.



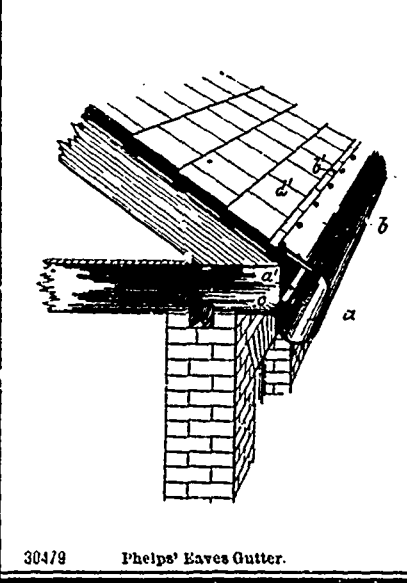
30476 Jewett's Swinging Car Truck.



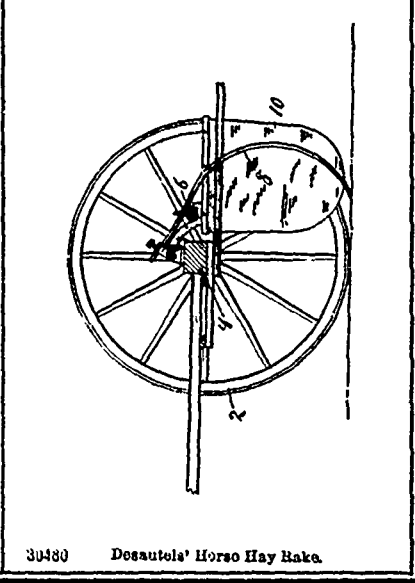
30477 Newbill's Plough.



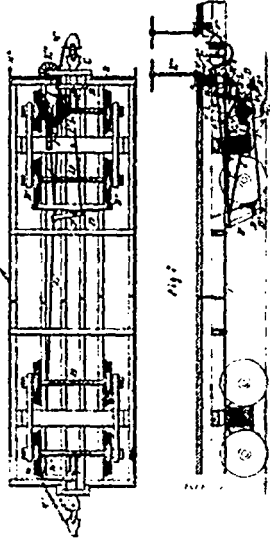
30478 Jacques' Cooking Stove.



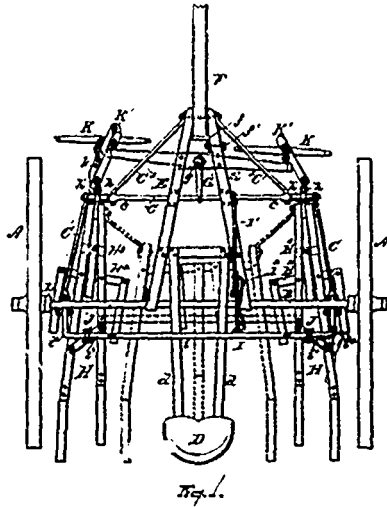
30479 Phelps' Eaves Gutter.



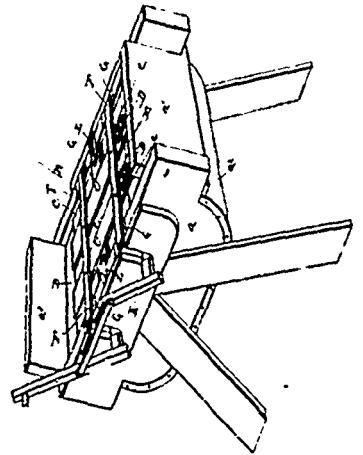
30480 Desautels' Horse Hay Rake.



30481 Hopper's Car Brake.

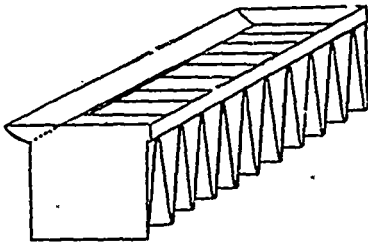


30482 Vowles' Wheel Harrow, etc.

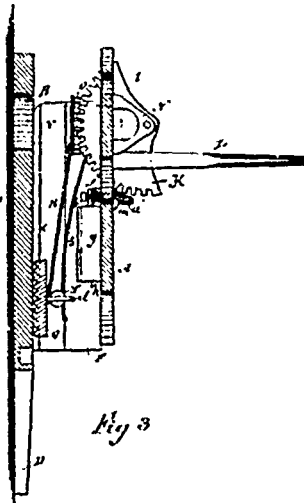


30484 Cory's Washing Machine.

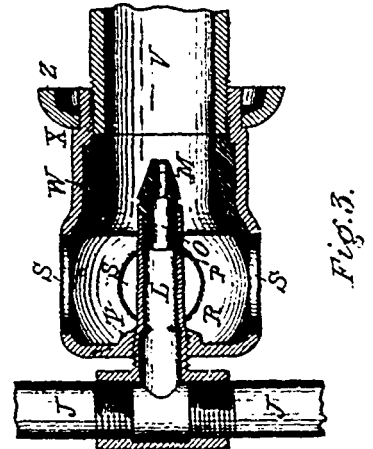
FIG. 1.



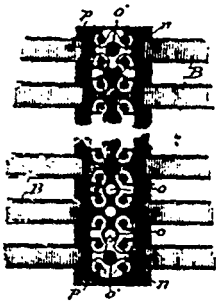
30485 Wells' Apparatus for Raising Cream, etc.



30487 Lallemand's Washing Machine.



30488 Hutchinson's Air Injector.



30489 Boussemacre's Photograph Exhibitor.

Fig. 5.

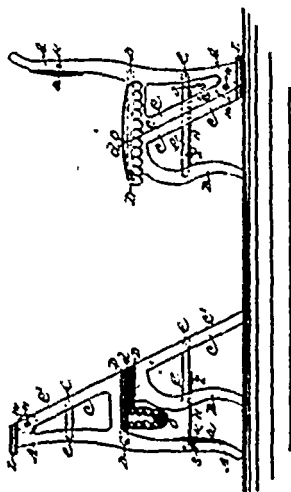
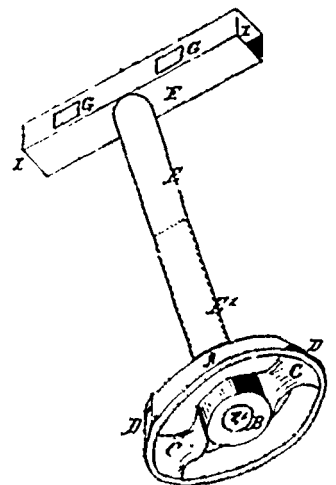
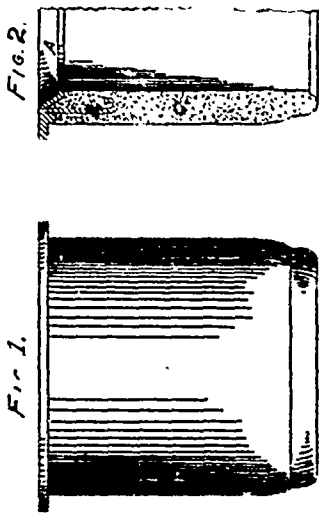


Fig. 6.

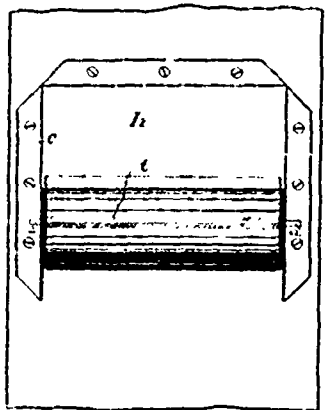
30490 Burke's Chair, Step-Ladder etc.



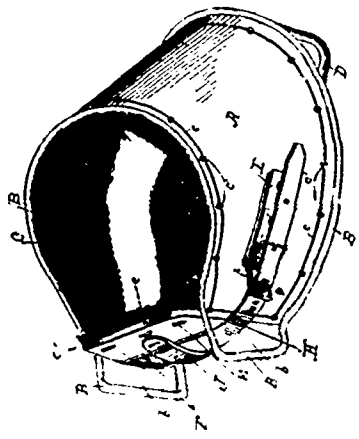
30491 Targor's Steam Washing Machine.



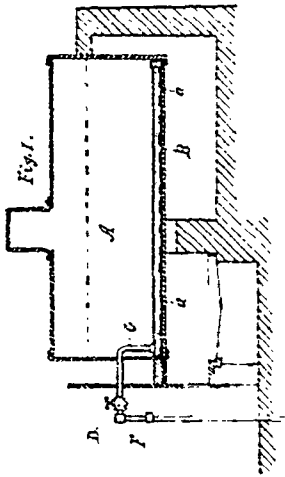
33492 Stringer's Floor Stone.



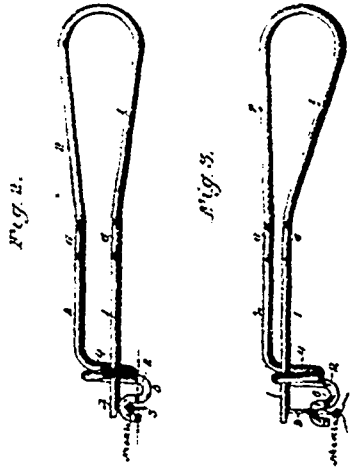
33493 Ricard's Apparatus for Supplying Salt to Cattle, etc.



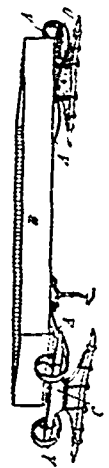
33494 Schild's Horse Boot.



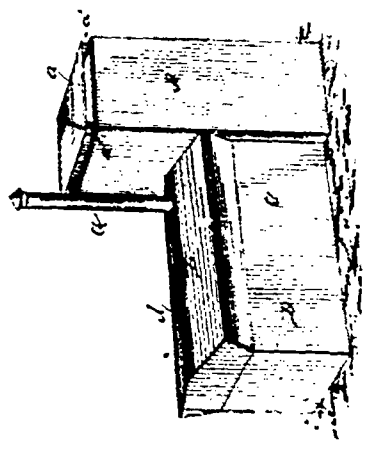
33495 Kellin's Device for Removing Sediment from Boilers.



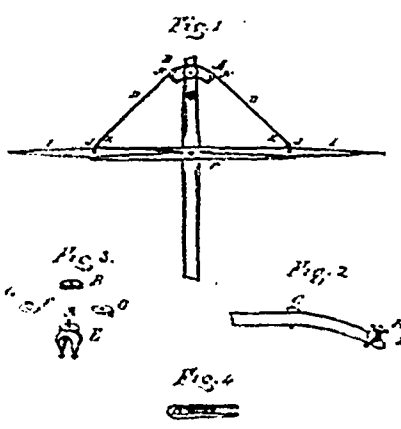
33496 Miller's Noodle Threader.



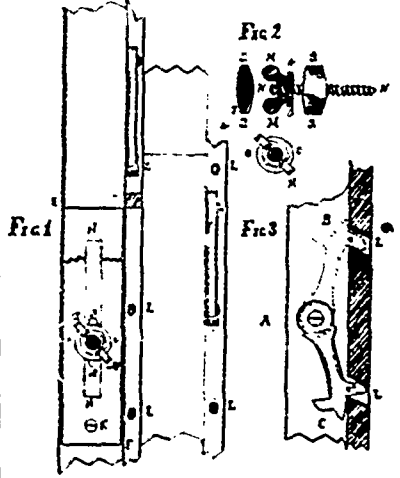
33497 Clark's Vehicle Spring.



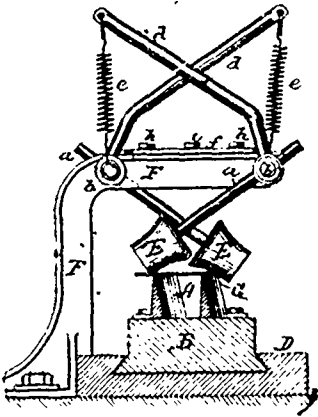
33498 Clifford's Apparatus for Heating Water.



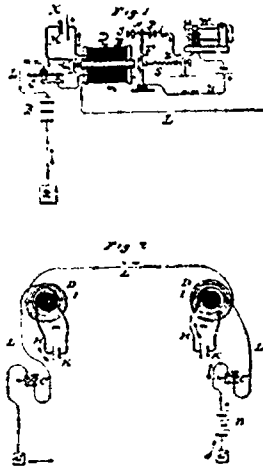
33499 Shuck's Doubletree and Whiffletree



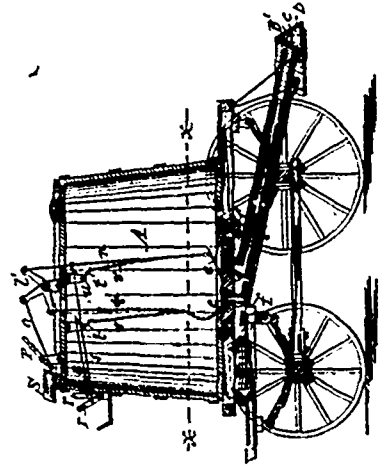
Urswell's Window Fastening



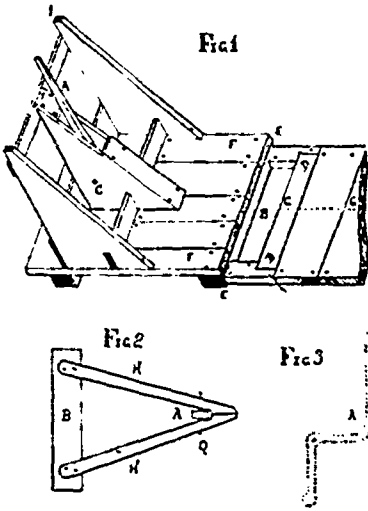
33501 Hammerstein's Machine for Cutting Wrappers for Cigars, etc.



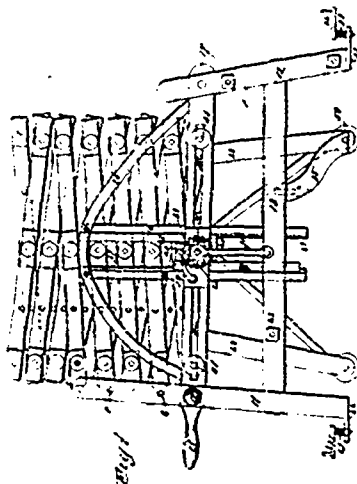
33502 Watson's Means of Operating with Electrical Conductors.



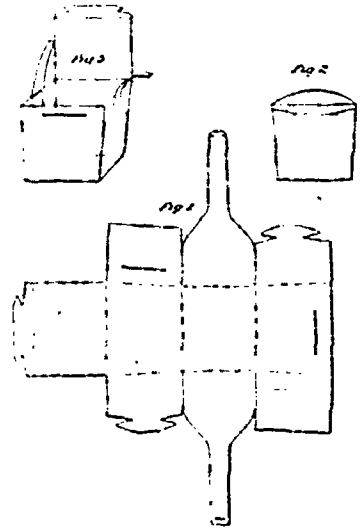
33503 Lischer's Street Sprinkler.



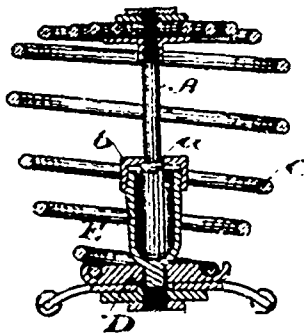
33504 McRae's Stable Cleaner.



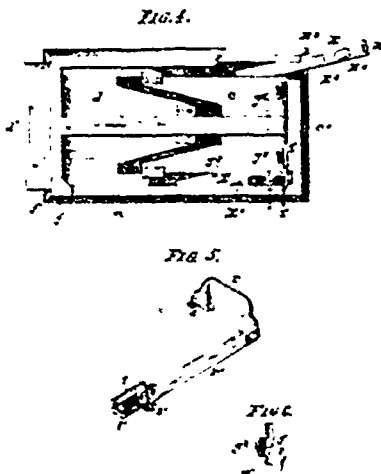
33505 Pich's Extension Ladder



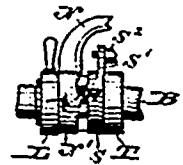
33506 Dobbins' Knock Down Box, etc.



33507 Clothe's Her's Tross.

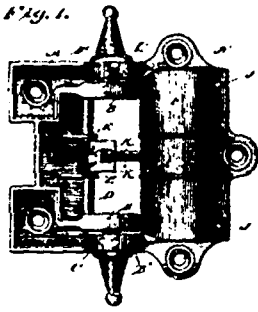


33508 Daggett's Surgical Table

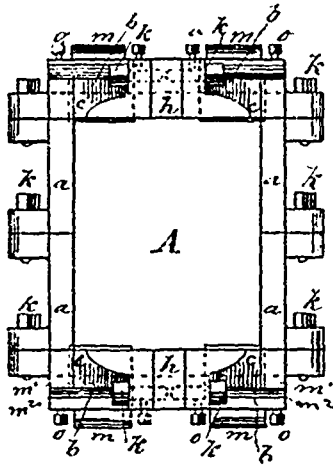


33509 Colt's Grinding Mill.

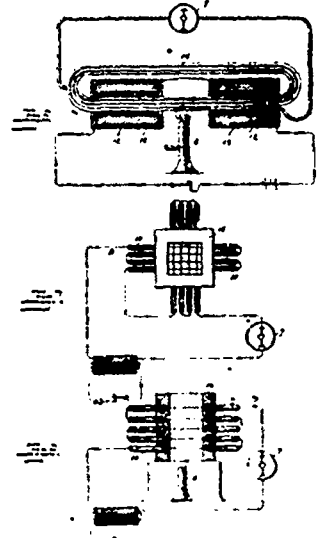
Fig. 1.



33510 Devoro & Hoefler's Spring Ring



33511 Stouts' Machine for Making Paper Boxes.



33512 Acheson's Calelectrio Generator.

Fig. 3.



Fig. 4.

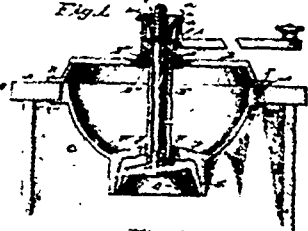


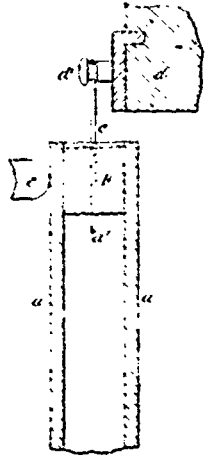
Fig. 5.



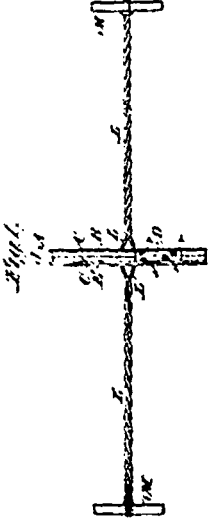
Fig. 6.



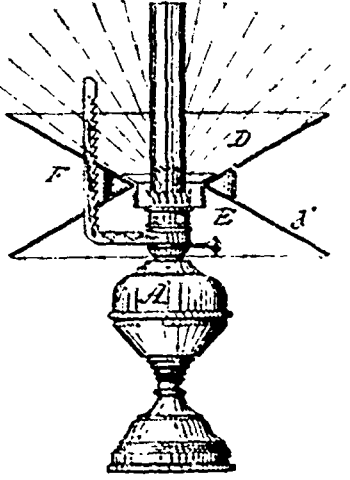
33513 Morgan's Coffee Mill.



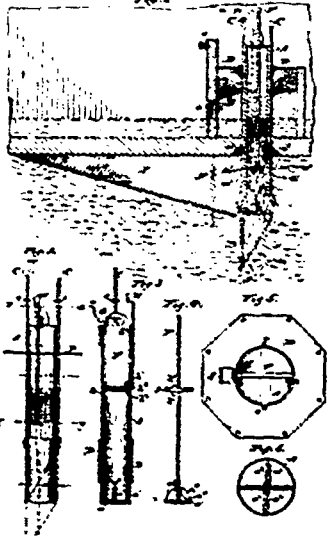
33514 Harrington's Apparatus for Producing Musical Sounds.



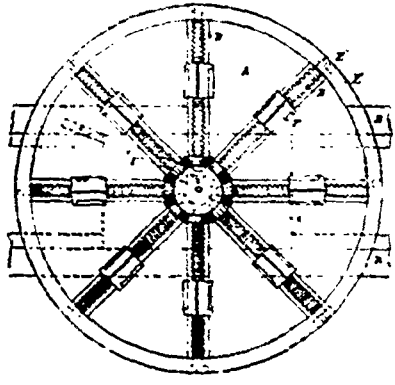
33515 Brown's Musical Toy.



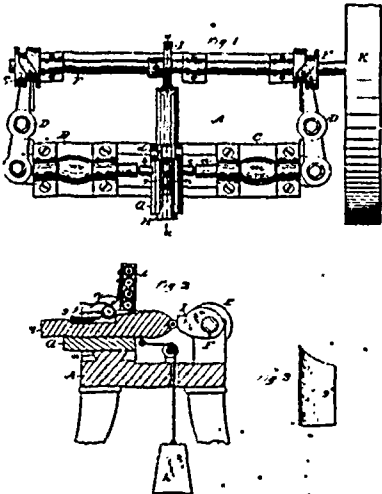
33516 Cobbe's Means of Reflecting Light



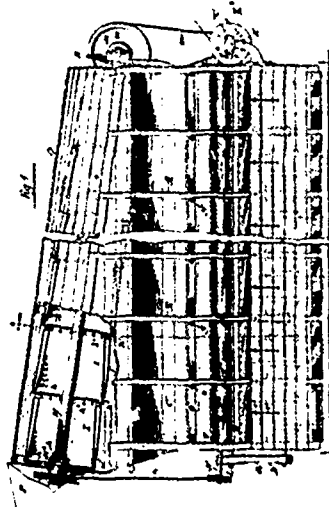
33517 Richardson's Edge Water Turbine



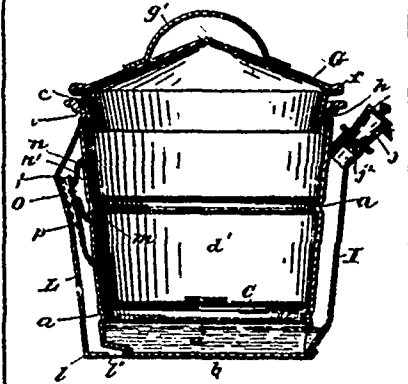
33518 Elward's Device for Rivetting Metal Spokes in Wheel Rims.



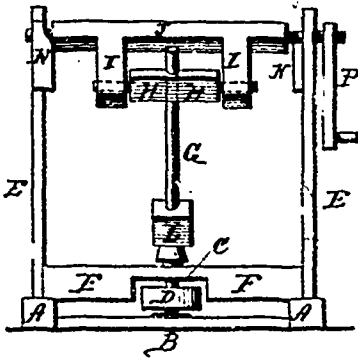
30519 Codling's Machine for Turning Articles of Metal, etc.



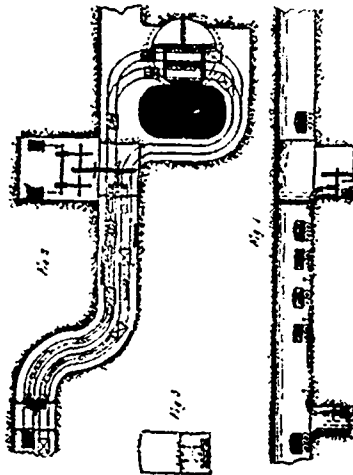
30520 Granger's Ore Separator.



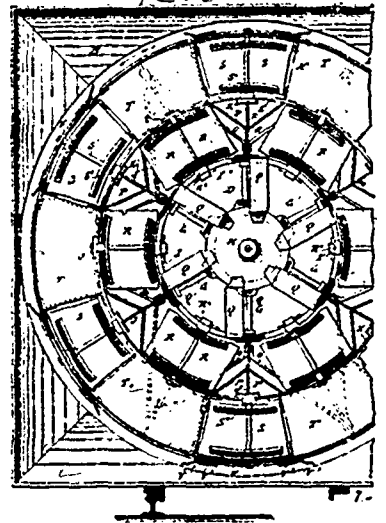
30521 Amos' Steam Cooker.



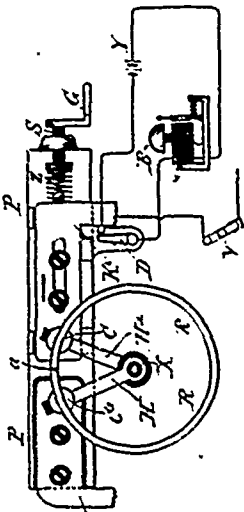
30522 Bailey & Liebersperger's Motor.



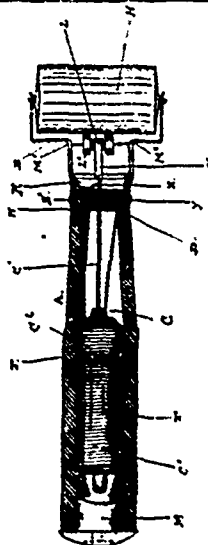
30523 Klink & Lawiecher's Cable Rail or Tramway.



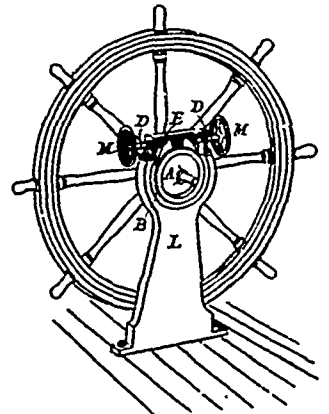
30524 Lealle's Rotary Excavator for Snow.



30525 Thomson's Apparatus for Electric Weaving.



30526 Muir's Electro Medical Apparatus.



30527 Stevens' Apparatus for Controlling Ship's Rudders.