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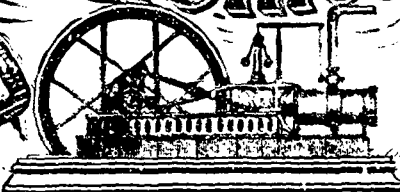
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INVENTIONS PATENTED.

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

No. 28,565. Apparatus for Moulding and Refining Sugar. (*Appareil pour mouler et cristalliser le sucre.*)

Hugh W. Walker and Thomas L. Patterson, Greenock, Scotland, 1st March, 1888. 5 years.

Claim.—1st. Apparatus for moulding and refining sugar comprising, in combination, a mould in the form of a truncated cone with an unperforated circumferential shell, a shaft with gear for driving it, and means for placing and holding the mould concentrically thereon, an annular cover through the centre of which the mould can be charged, and with a circumferential outlet closed when charging, and open when draining or drying, and a central cover and inner shell with means for fixing the same in position after charging the mould, the parts being arranged and operating substantially as herein set forth. 2nd. In combination, a number of flat annular plates having distance projections, and a rotary mould having the plates at right angles to its axis, for the purpose of moulding sugar in flat annular cakes, substantially as herein set forth. 3rd. Means for allowing syrup to escape from a rotary sugar mould having an unperforated circumferential shell, and consisting of spaces between the edges of dividing plates and the shell in combination with an outlet between an annular cover and the edge of the shell, together with a valve in the said outlet, the parts being arranged and operating substantially as herein set forth. 4th. As a valve for an outlet between the edge of the shell of a rotary sugar mould and its cover, a ring or annular lip of rubber opening when subjected to sufficient centrifugal force and closing by its elasticity when not so subjected, substantially as herein set forth.

No. 28,566. Door Check. (*Arrête-porte.*)

George H. Lusk, Pomona, Fla., U.S., 1st March, 1888; 5 years.

Claim.—1st. In a door or other check, the combination, with a shouldered stud, of a casing, a circular engaging spring contained by said casing, and a core supporting the spring, substantially as described. 2nd. In a door or other check, the combination, with a shouldered stud, of a casing, a circular engaging spring contained by said casing, a core supporting the spring, and projections sustaining the core in a fixed position and allowing the free expansion of the spring, substantially as described. 3rd. In a door or other check, a door knob secured to the door latch and capable of being rotated to unlatch the door having an opening in its face and provided interiorly with an engaging spring, in combination with a shouldered stud to be engaged by said spring in the door knob, substantially as described. 4th. The combination of a split core, projections formed on said core, and a coiled spring loosely enveloping the core and having small coils 2 for grasping the core between the projections 9, substantially as described. 5th. The combination, with a shouldered stud and a casing provided with ribs 7, of a core supporting a coiled engaging spring having projections 8, substantially as described.

No. 28,567. Burglar Alarm.

(*Avertisseur d'effraction.*)

Samuel Goulden and Joseph Clarke, Toronto, Ont., 1st March, 1888; 5 years.

Claim.—1st. A plate provided with suitable feet and arranged to support a bell and its ringing mechanism, in combination with a longitudinally-sliding bar adjustably connected to the bell mechanism in such a manner that the longitudinal movement of the bar will cause the bell to ring, substantially as and for the purpose specified. 2nd. A plate provided with suitable feet and arranged to support a bell and its ringing mechanism, spring hammers J pivoted upon the plate, in combination with a longitudinally-sliding bar connected to the bell mechanism in such a manner that the longitudinal movement of the bar will cause the bell to ring, a T-bar K connected to the said bar, arranged to strike the spring hammers on the longitudinal movement of the bar, substantially as and for the purpose specified.

3rd. A plate A provided with suitable feet a, a bar B adjustably connected to the said plate, and having a slot b made in it, through which the spindle D projects and is connected to the bar B, by the pin d, as described, in combination with the bell-hammer arm H pivoted at e and operated by the crank-disk G connected to the spindle F, which is geared to the spindle D, deriving motion therefrom upon the longitudinal adjustment of the bar B, substantially as and for the purpose specified. 4th. The plate A, provided with suitable feet a and having pivoted upon it the spring hammers J, in combination with the bar B having attached to it the T-bar K, arranged to strike the spring hammers J upon the longitudinal adjustment of the bar B, substantially as and for the purpose specified.

No. 28,568. Oil Well Pump Packer.

(*Garniture de pompe de puits d'huile.*)

James H. Hoskins, Oil Springs, Ont., 1st March, 1888. 5 years.

Claim.—1st. The combination, with the pump tube having a spring valve, of a flexible cylindrical bag enclosing the valve, the upper end of the bag closed around the pump tube, and the lower end around a sleeve surrounding the pump tube, and provided with perforated flanges and a perforated ring or flange secured to the pump tube, to open and stop the perforations when the pump tube is rotated, as set forth. 2nd. The mode herein described of packing oil wells, consisting in the attachment of a flexible bag around the pump tube, having an inlet to the bag and inflating said bag through the inlet, by the pressure of liquid in the upper part of the pump tube, as set forth.

No. 28,569. Car-Coupler. (*Attelage de chars.*)

George D. Pearson, Robert Cowans, and George E. Drummond, in trust for Drummond McCall and Company, Montreal, Que., 1st March, 1888; 5 years.

Claim.—1st. As an improved article of manufacture or construction, a bunter having extensions and bridge-pieces, as described, said bridge-pieces being provided with holes for the introduction of the coupling pin, and with a space between them for the coupling link, said space for the link being situated, as shown and described, in relation to the body of the bunter, so that the link may be placed therein from the back thereof, the whole substantially as described and shown. 2nd. As an improved article of manufacture or construction, a bunter having extensions and bridge-pieces, said bridge-pieces being provided with holes and counter-bore for the reception of the coupling pin and head thereof, and also provided with a space between them for the reception of the coupling link, the said space for the link being relatively so situated, as shown and described, that the said link can be placed therein from the back thereof, furthermore, the said bunter being provided with a recess or opening H, and pivot K passing through the one end of the pawl and attaching the pawl thereby, and with said pawl, the whole substantially as described and shown. 3rd. The combination, in car-couplings, of a bunter body E having extensions F, bridge-pieces I, provided with holes G and having space M situated, as described and shown, relatively so that the link N may be placed therein from the back thereof, the said bunter having the said parts with another bunter similarly constructed, and with pins P and link N, the whole substantially as described and shown. 4th. The combination, in car-couplings, of the bunter body E, extensions F and bridge-pieces I, arranged to form the spaces G, H and M, and the bridge-pieces I, being furthermore provided with the holes G and counter-bore R, the said space M being relatively so situated to the body of the bunter that the link N may be passed and placed therein from the back thereof, pawl L, pivot bolt K, by which the said pawl is attached and pivoted in the space H, one bunter having the said parts with another bunter similarly constructed, and with coupling-pins P, P and link N, the whole substantially as described and shown.

No. 28,570. Car Roof. (*Toiture de char.*)

The LeGros Building and Car Roofing Company, (assignee of Alfred P. LeGros), Louisville, Ky., U.S., 1st March, 1888. 5 years.

Claim.—1st. The combination of the rabbeted roof boards, the painted canvas folded and fitted into the rabbets, and the canvas or paper strip c fitted in the rabbets beneath the fold of the canvas, as and for the purpose set forth. 2nd. The combination of the rabbeted

roof-boards, the painted canvas sunk and fitted into the rabbets, the paper or canvas strip and the surface boards *a, a*, as and for the purpose set forth.

No. 28,571. Spring Vehicle. (*Voiture à ressorts.*)

Lauren M. Fitch and Moses M. Davis, Rome, N.Y., U.S., 1st March, 1888; 5 years.

Claim.—1st. In combination with the axle and cross-springs at opposite sides thereof, the spring supporting arm *a* placed astride the top of the axle and projecting horizontally and at right angles from opposite sides thereof, and formed with shackle-eyes at the free ends, and with shanks *b, b*, riding upon the top of the axle, all formed in one piece, substantially as described and shown. 2nd. In combination with the forward axle, reach and cross-springs at opposite sides of said axle, the plate *B* mounted on top of said springs and having grooves fitted to the springs, the fifth-wheel *C* secured to the top of said plate, with the centre of the fifth-wheel in a vertical line passing between the rear side of the axle and adjacent cross-spring, the block *f* clipped onto the rear side of the axle and having an eye in the vertical line passing through the centre of the fifth-wheel, and the straps *e, e*, secured to the end of the reach and pivoted on the block *f*, all combined substantially in the manner specified and shown.

No. 28,572. Window. (*Fenêtre.*)

William Fountain, Chicago, Ill. (assignee of Henry Tintrop, San Francisco, Cal.), U.S., 1st March, 1888; 5 years.

Claim.—1st. In a window, the combination, with a sliding sash having plates provided with openings secured to its upper and lower inner edges, and located adjacent to one end of the sash, of an inner sash, spring plates *H* secured thereto at one end, and free at their other end, pivot-pins formed integral with said plates and adapted to enter the pivot-openings, and a sliding catch located on the side of the pivoted sash and adapted to engage one of the sides of the sliding sash, substantially as set forth.

No. 28,573. Gravity Lock. (*Serrure à gravité.*)

The Peterborough Lock Manufacturing Company, (assignee of Charles S. Osgood), Peterborough, Ont., 1st March, 1888; 5 years.

Claim.—1st. The combination, with a latch bolt, of a pivoted lever having its short arm in contact with the latch-bolt, and its long arm arranged to support a vertically-adjustable weight, substantially as and for the purpose specified. 2nd. The combination, with a latch-bolt, of a pivoted lever having its short arm in contact with the latch-bolt, its long arm arranged to support a vertically-adjustable weight and its heel in contact with the tumbler of the lock, substantially as and for the purpose specified. 3rd. The combination, with a latch-bolt, of a pivoted lever having its short arm in contact with the latch-bolt, and its long arm arranged to support a vertically-adjustable weight, and a pivoted stop arranged to lock the weight, substantially as and for the purpose specified. 4th. A pivoted lever arranged to support a vertically-adjustable weight and formed so as to be in contact with the top side of the tumbler of the lock, in combination with the lock-bolt formed so that its end may be adjusted against a shoulder formed on the head of the latch-bolt, substantially as and for the purpose specified. 5th. A latch-bolt *A*, pivotally connected to the pivoted hanger *B*, which is actuated by the tongue *a*, formed on the spindle-bearing *C*, a projecting lip *d* formed on the bolt *A*, and extending close to the short arm *e* of the lever *D*, in combination with the vertically-adjustable weight *E*, arranged to rest upon, and be supported by, the long arm of the lever *D*, substantially as specified. 6th. A pivoted lever *B* arranged to support the vertically-adjustable weight *E*, and having a lip *f* extending over the tumbler *H*, in combination with the said tumbler and with the lock-bolt *G*, arranged so that its end may be thrown against the shoulder *c*, formed on the head of the latch-bolt *A*, substantially as and for the purpose specified. 7th. A keeper *I* having a bevelled projection *f* in combination with a square-ended latch-bolt, substantially as and for the purpose specified.

No. 28,574. Shuttle Motion.

(*Mouvement de navette.*)

Samuel Greening, Hamilton (assignee of John Maw, Dundas), Ont., 1st March, 1888; 5 years.

Claim.—1st. In a positive shuttle motion, the combination, with the shuttle frame, of a duplex locking lever pivoted to said frame and adapted to come in contact with the carrier arms, thereby effecting the first part of the movement of the locking lever, and a reversing spring attached to the shuttle frame and completing the movement of the locking lever, substantially as set forth. 2nd. The combination, with the carrying arms *C, C*, provided with locking recesses *f, f* and heads *F, F*, of a shuttle provided with a duplex locking lever *D*, having a tail-piece *g*, and projection *I*, and a reversing spring *H* bearing against the projection *I*, substantially as set forth. 3rd. The combination, with the shuttle-frame, provided with a hollow post *J*, of a bobbin mounted on said post, and a tension spring *L* provided with a pin *l*, which enters the bore of the hollow post and is locked within the same, substantially as set forth. 4th. The combination, with the shuttle frame, provided with a hollow post *J*, having a locking groove *a, a*, *a*, of a bobbin mounted on said post, a tension spring *L*, and a pin secured to said spring and provided with a projection *m*, whereby the pin is locked in the groove of the post, substantially as set forth.

No. 28,575. Embroidering Frame.

(*Métier à broder.*)

Richard Voiglander, Gohlis Leipzig (assignee of Julius Morgner, Leipzig), Germany, 1st March, 1888; 5 years.

Claim.—1st. The combination of a plate *m*, capable of being fixed in relation to the sewing machine, an intermediate plate *d* connected to said plate *m* by parallel and equal rods *b*, a plate *s* for sup-

porting the cloth frame, connected to said plate *d* by parallel and equal rods *c*, one of said rods being extended beyond its connection with the intermediate plate *d*, a stylus arm *g* pivoted to said extension, and arm *f* equal in length to said extension, parallel thereto, and connected substantially as set forth and illustrated. 2nd. The combination of a plate *m*, capable of being fixed in relation to the sewing machine, an intermediate plate *d* connected to said plate *m* by parallel and equal rods, the points of connection being extensible from one another on said rods, a plate *s* for supporting the cloth-frame connected to said plate *d* by parallel and equal rods *c*, the points of connection being extensible from one another on said rods, one of said rods being extended beyond its connection with the intermediate plate *d*, a stylus arm *g* pivoted to said extension, and arm *f* parallel to said extension, and connected to arm *g* with a movable connection, substantially as and for the purpose set forth. 3rd. The combination, with a plate, of a cloth stretching frame having an ear adapted to be fixed upon said plate against rotary displacement, a slot *e* in said ear, a hole *k* tapped in said plate, together with a screw *x* adapted to engage into said hole *k*, substantially as and for the purpose set forth. 4th. The combination, with a plate, of a cloth-stretching frame having an ear adapted to be fixed upon said plate, a laterally open slot *e* and a hole *r* in said ear, a hole *k* tapped in said plate, and a pin *r* on said plate, together with a set-screw *x*, substantially as and for the purpose set forth.

No. 28,576. Loom Temple. (*Temple de métier.*)

William H. Taylor, Hampton, Ont., 1st March, 1888; 5 years.

Claim.—1st. The combination, with the T-shaped frame, composed of bars *A* and *B*, of the tilting bar *D* and spring *E*, provided with teeth *e*, and inclined plane *L*, as set forth. 2nd. A loom temple consisting of a bar *A*, having longitudinal slots *a, a*, bar *B* secured at one end transversely to the middle of bar *A*, and provided with slots *C, C*, near the opposite end, tilting bar *D* pivoted to bar *B* and provided with an adjustable striker plate *K* at one end, and spring *E* at the other end, said spring provided with teeth *e*, and inclined plane *L*, and means for the attachment of a cord *G* and a weight, for the purpose set forth.

No. 28,577. Sock. (*Chaussette.*)

H. Hubert Humphrey, Detroit, Mich., U.S., 1st March, 1888; 5 years.

Claim.—1st. As an article of manufacture, a sock consisting of a plain knit fabric, provided with loops sewed into the interior face of the fabric, said loops constituting a plush or fleeced lining to said sock, substantially as described. 2nd. As an article of manufacture, a plain knit fabric provided with loops sewed into said fabric to constitute a fleece lining, substantially as described. 3rd. As an article of manufacture, a ribbed sock, said sock provided with a plush or tufted inside finish, said plush or tufted work consisting of loops sewed into the inner surface of the sock, substantially as described. 4th. As an article of manufacture, a sock, consisting of a knit fabric knit plain upon a separate machine, said fabric provided with loops sewed into the interior face of the fabric by an additional separate machine constructed for that purpose, said loops consisting of a separate continuous thread of yarn sewed into said fabric spirally about the interior thereof, substantially as described. 5th. As an article of manufacture, a sock, consisting of a knitted fabric, provided with loops or tufts stitched into the interior face of said fabric to constitute a fleece or plush lining, said sock knit to desired size, without fulling, to leave the article soft and elastic, substantially as described.

No. 28,578. Leather or Sweat Band of Hats, etc. (*Cuir pour chapeaux, etc.*)

Fred. Howitt, Hyde, and Edwin Bent, Bredbury, Eng., 1st March, 1888; 15 years.

Claim.—1st. The combination, with a hat or other head covering, of the coned or tapered sweat-band *c*, the outer edge of which is stitched or otherwise attached to the edge of the interior of the said hat or head covering, whereby a free space is left all round between the said sweat-band and the inside of the said hat or head covering, except at the point of attachment, substantially as herein set forth for the purposes specified. 2nd. The combination, with a hat or other head covering, of the coned or tapered sweat-band *a* and the elastic gusset *c*, substantially as and for the purposes herein set forth. 3rd. The combination, with a hat or other head covering, of the coned or tapered sweat-band *a*, the perforations *a* and the elastic gusset *c*, substantially as and for the purposes herein set forth. 4th. The combination, with a hat or other head covering, of the coned or tapered sweat-band *a* and the perforations *a*, substantially as and for the purposes herein set forth.

No. 28,579. Furnace Grate. (*Grille de fourneau.*)

William H. Heeson, Baltimore, Md., U.S., 1st March, 1888; 5 years.

Claim.—1st. A grate-bar, formed with a doubled central web composed of the two single webs forming the longitudinal vertical air space between them, having the lateral series of wings or ribs on their outsides, as shown and described. 2nd. The herein described grate-bar, formed with the double central web forming the longitudinal vertical air space in its centre, and having the series of alternating ribs on each side, having their outer ends connected by the longitudinal ribs, substantially as set forth and shown. 3rd. The herein described grate-bar, formed with the end trunnions and the double central web forming the longitudinal vertical air space in its centre, and having the series of alternating ribs on each side, having their outer ends connected by the longitudinal ribs, substantially as set forth. 4th. The combination, with the furnace formed with the end bearings, and having the central partition formed with the semi-circular bearings and the intermediate spaces of the grate-bar formed each with the end trunnion, the double central web forming the longitudinal vertical air space, having the series of alternating ribs on each side, and having the central trunnion formed at the bottom

of the central web, substantially as set forth. 5th. The combination with the furnace formed with the end bearings, and having the central partition formed with the semicircular bearings, and the intermediate recesses of the grate-bars formed each with the end trunnions, the double central web forming the longitudinal vertical air space, having the series of alternating ribs on each side, connected at their ends by the longitudinal ribs, having the central trunnion forced at the bottom of its central web, and formed at each of its ends with the pair of perforated lips, the connecting bar, and means for rocking one of the said bars, substantially as set forth.

No. 28,580. Stump-Puller. (*Arrache-souche.*)

William J. Hartrup, Walter Hartrup and George Hartrup, Tidionte, Penn., U.S., 1st March, 1883; 5 years.

Claim.—1st. In a stump-puller, the combination of a derrick having a doubled bar suspended from its top, having a hook at each end, a chain suspended by one end from one of said hooks, said chain consisting of a series of links, one of which is longer than the others, a lever pivotally suspended from the other of said hooks, one end of which passes through the long link of the chain, and two hooks pivotally secured at one end to the lever and adapted to engage the chain with their outer ends, as shown. 2nd. In a stump-puller, the combination of a derrick, a doubled bar suspended from its top, having a hook at each end, a chain suspended from one of said hooks, said chain consisting of a short link, a long link and a series of short links, said short link being suspended from one of the hooks in said doubled bar, a lever suspended from the other hook, one end of which passes through said longer link, two hooks suspended from said lever, the lower ends of which are adapted to engage with the series of short links in said chain, as described and shown. 3rd. In a stump-puller the combination of a derrick, a doubled bar suspended from its top having a hook at each end, one end of said bar being shorter than the other, a chain suspended from the hook upon the shorter end of said doubled bar, having one of its links longer than the other, a lever suspended from the longer end of said doubled bar, one end of which passes through said longer link and two hooks suspended from said lever, the lower ends of which are adapted to engage with said chain.

No. 28,581. Method of, and Apparatus for Generating Vapour or Gas from Petroleum or other Oil, with Burner for Burning the Same in Lighthouse or other Lamps. (*Mode et appareil de production de la vapeur et du gaz de pétrole ou d'autres huiles, et bec de lampe à gaz pour lampes à phares et autres.*)

William Wakefield, Dublin, Ireland, 1st March, 1883; 5 years.

Claim.—1st In apparatus for generating vapour or gas from petroleum or other oils, the combination of a lamp or burner, a vapouriser or retort pipes for feeding the oil to the vapouriser from any suitable receptacle or reservoir, and conduit for conducting the vapour generated in the retort from same to the lamp or burner, said lamp or burner being arranged below the vapouriser so that the heat from it will generate the vapour, all substantially as shown and described. 2nd. In apparatus for generating vapour or gas from petroleum or other oils, the combination of a lamp or burner A, B, C, D, E, a vapouriser or retort G, pipes E, L, respectively, for feeding oil or gas to the vapouriser from any convenient source, and conduit I for conducting the vapour generated in the retort from same to the lamp or burner, all substantially as shown and described.

No. 28,582. Door Weather Strip.

(*Bourrelet de porte.*)

John L. Breeze, Nanawee, Ont., 1st March, 1883; 5 years.

Claim.—The combination, with the door C, of the strip D, having an arm H projected against the door-jamb, and provided with a rubber strip or cushion E along its lower edge, and the upper edge attached to the door, the flat curved spring G secured at one end to the door, and the other or free end bearing against the lower face of strip D, whereby said arm, by contact with the door jamb when closing the door, forces the strip D against the resistance of the spring to a vertical position, and, when the door opens, the spring re-acts to lift the weather-strip to an inclined position, as set forth.

No. 28,583. Electrical Apparatus for Dental purposes. (*Appareil électrique pour dentistes.*)

Elias Smith, Peoria, Ill., U.S., 1st March, 1883; 5 years.

Claim.—1st. In an electrical apparatus for dental purposes, a generator, an induction-coil having its armature mounted on a spring supported at both ends, and electrodes, substantially as described. 2nd. In an electrical dental apparatus, a generator, an induction-coil having its armature mounted on a spring fixed at one end, and provided at the other with a tension device, whereby the rapidity of the electrical impulses allowed to pass through the induction-coil is regulated, and the electrodes, substantially as described. 3rd. In an electrical apparatus for dental purposes, the generator, the induction-coil having its armature mounted on a spring fast at one end, and secured at the other to a lever and set-screw, whereby the rapidity of the electrical impulses allowed to pass through the induction-coil is regulated, and the electrodes, substantially as described. 4th. In an electrical apparatus for dental purposes, a generator, an induction-coil, the electrodes and the wire from one of the discharge-posts, connected with a pair of forceps, or the like, substantially as described. 5th. In an electrical apparatus for dental purposes, the elongated spring U forming a portion of the circuit, and the elongated lever W

mounted on the exterior of the case, and having a projection extending through the case and bearing against the spring, substantially as described. 6th. The combination, in an electrical apparatus for dental purposes, of one or more battery-cells, an induction-coil having its armature mounted on a spring supported at both ends, and provided with a tension device, the electrodes and the forceps, or other instrument, attached to one of the electrodes, substantially as described. 7th. The combination in an electrical apparatus, of one or more cells, an induction-coil having its armature mounted on a spring supported at both ends, and provided with a tension device, the elongated spring forming part of the circuit, the lever mounted on the case and bearing against the spring, the electrodes and the forceps, or the like, connected with one of the electrodes, substantially as described.

No. 28,584. Grain Binder. (*Lièuse à grain.*)

William M. Steins, Pittsburgh, and John Bowman, Allegheny, Penn., U.S., 1st March, 1883; 5 years.

Claim.—1st. In a hand grain binder the combination of a frame consisting of two diverging arms united at the rear ends by a handle, and two semicircular bars secured parallel with each other at one end, between the converging ends of the arms, and with their diverging ends to the forward ends of the arms having teeth or prongs at the diverging ends, an operating lever pivoted at its lower end upon a bolt in the centre of the semicircular bars, a curved needle having a twine threaded in its eyed outer end, and having its inner end secured to arms pivoted with their inner ends upon the central bolt, a cord secured to the operating lever and passing over guide-shafts upon the semicircular bars, and at the forward end of the frame being secured to near the inner end of the needle, a spring for drawing the needle back, and a knotting mechanism for tying the twine secured above the pronged ends of the semicircular bars and operated by the operating lever, as and for the purpose shown and set forth. 2nd. In a hand grain binder, the combination of a frame consisting of two diverging arms united at the rear ends by a handle, and of two semicircular bars secured with their rear ends between the rear portions of the arms, and having their forward diverging ends secured to the diverging ends of the arms, and having curved prongs at their forward ends of a central prong extending upwards to a brace supporting a forwardly projecting handle, a twine box secured to the rear end of the arms, a tension device upon the rear end of one of the semicircular bars, a segmental needle having a twine-receiving groove in its back bridged by pins, and an eye at its outer end, and secured to the outer ends of arms pivoted upon a bolt central to the semicircular bars, passing through the diverging arms and braced by an inclined brace between the arms and the inner portion of the needle, a bifurcated arm pivoted near its curved end upon the side of one of the arms of the needle, and having a spring attached to its end and to the said arm, an operating lever pivoted at its inner end upon the central bolt and sliding between the semicircular bars having a handle at its outer end, a cord secured to the lever and passing over pulleys upon the semicircular bars and near the forward end of the frame, and between the forked end of the bifurcated arm being secured to the brace of the needle, a spring secured to the forward end of the frame and to one of the needle-arms, a twine-holder upon the forward portion of the frame, and a knotting mechanism below the holder for the tying of the twine, as and for the purpose shown and set forth. 3rd. In a grain binder, the combination of a bar provided at one end and having a spring forcing it to one side, and provided with blocks at its ends formed with longitudinal bearings, a knoter journaled with the end of its shaft in the outer bearing, and having a pinion within the bearing, and provided with a foot formed with a rounded heel, and with a straight prong, and with an inwardly hooked prong at its end, a bar sliding in the bearings and having suitable means for reciprocating it, and formed with a smooth forward portion, and with a rack-portion near the middle meshing with the pinion, and having longitudinal slots in it at the forward portion of the rack-portion and to the rear of the same, a sleeve journaled at the side of the sliding bar upon a bolt of the rocking bar, and having an arm at its upper end bearing against the side of the sliding bar engaging the slot of the same, and having an arm at its lower end at a right angle to the same, and bearing against an abutment plate at the side of the rocking bar near its free end, a spring secured at its rear end and having a curved loop at its forward end passed around the sleeve and over the upper arm of the same, and guides holding the twine at right angles to the shaft of the knoter and having a cutter at one side of the knoter, as and for the purpose shown and set forth. 4th. In a grain binder, the combination of a table having a partition wall, and having a plate upon the said partition near the outer end extended to form a curved guard, and having a guard lip upon the end of the partition projecting inward and towards the inner side of the curved guard, a cross-piece having diverging guard-fingers forming a notch registering with the space between the guard and the lip, a rectangular bent outer having its fulcrum at the bend and having its cutting edge registering with one finger, and having a spring secured to its long arm drawing it inward, a bar pivoted at its inner end upon the table and provided with blocks having longitudinal bearings at its ends, and with a spring drawing it towards the partition, a knoter journaled with its shaft in the forward block having a pinion within the bearing, and having a foot at its end formed with a rounded heel, and with a straight prong, and with an inwardly hooked prong, a bar having means for reciprocating it and having a smooth forward portion sliding in the forward bearings, and a rack-portion meshing with the pinion, and a smooth rear portion, and formed with a longitudinal slot in the forward portion of the rack-portion and to the rear of the same, a sleeve journaled at the end of the sliding bar upon a vertical bolt upon the rocking bar, and having an arm at its upper end bearing against the sliding bar engaging the slot, and an arm at the lower end at a right angle to the upper arm and bearing against the abutment-plate upon the partition, a spring secured at the rear end to the partition and having a loop at the forward end passed around the sleeve and secured over the upper arm, and a flat bar secured above the sliding bar upon it and parallel to it and engaging the long arm of the cutter when pushed forward, as and for the purpose shown and set forth.

No. 28,585. Wire Fabric Machine.*(Machine à toile métallique.)*

Alva L. S. Kitzelman, Ridgeville, Ind., U. S., 1st March, 1883; 5 years.

Claim.—1st. In a wire fabric machine, a series of sectional twist-ers, each of which comprises a central section for carrying a warp wire and having rotary motion imparted thereto, and the shifting sections for carrying the weft wire and receiving rotary motion from the central section to form the twist, substantially as and for the purpose herein described. 2nd. In a wire fabric machine, the combination of a series of sectional twist-ers geared together for simultaneous rotation, and each comprising a central portion movable on its axis, and side portions capable of a compound movement, that of rotation, of their axis, and of a shifting longitudinal movement, substantially as described for the purpose set forth. 3rd. In a wire fabric machine, the combination of a series of sectional twist-ers comprising the central section having rotary movement imparted thereto, to rotate the same on its axis only, the shifting side sections adapted to align with the central sections to be rotated thereby, and mechanism for shifting the said side sections, to cause the side section of one twister to coincide with the central section of the adjacent twister, substantially as described for the purpose set forth. 4th. In a wire fabric machine, the combination, with the series of sectional twist-ers, of the shifting frames carrying the movable sections of the twist-ers, the central section of the twist-ers being held from longitudinal movement during the shifting of the frames, and the side sections being carried by the frames to cross the wires, the side sections being rotated by the central sections, substantially as described for the purpose set forth. 5th. In a wire fabric machine, the combination, with the sectional twist-ers comprising the central sections capable of rotating movement on their axis only, and the side sections having longitudinal movement and rotated by the central sections of the shifting frames carrying the said side sections, which are capable of free rotation thereon, substantially as described for the purpose set forth. 6th. In a wire fabric machine, the combination of the sectional twist-ers comprising the central section having the projecting heads, and the side sections fitted against the central section, and the sliding frames in which the side sections are carried and are capable of free rotation, substantially as described for the purpose set forth. 7th. In a wire fabric machine, the sectional twist-ers comprising the central and side sections movable with respect to each other, the sliding frames movable in opposite directions simultaneously and carrying the side sections therewith, and means for shifting the said frames, substantially as described for the purpose set forth. 8th. In a wire fabric machine, the sectional twist-ers comprising the central and side sections, in combination with the sliding frames having the recesses in which the side sections of the twist-ers are fitted, and a lever connected with the slides for moving them in opposite directions simultaneously, substantially as described. 9th. In a wire fabric machine, the series of sectional twist-ers comprising the central and side sections, the central section of each twister being geared to the twister adjacent thereto for simultaneous operation, substantially as described for the purpose set forth. 10th. In a wire fabric machine, the combination of a series of twist-ers geared directly together for simultaneous operation, and each comprising a central section and the side section, each side section carrying a spool or reel for the wire, substantially as described for the purpose set forth. 11th. In a wire fabric machine, a series of twist-ers connected for simultaneous operation, and each consisting of a central section and the side section, in combination with the spools carried by the side section, the central section of each twister being provided with a longitudinal opening for the passage therethrough of the warp wire, substantially as described. 12th. In a wire fabric machine, the combination of a carrying frame, the sliding frames thereon, the sectional twist-ers having the stationary central section of the side sections fitted to the sliding frames, and means for moving the carrying frame with a stop-by-stop motion, substantially as described for the purpose set forth. 13th. The combination of a series of twist-ers geared directly together, and each consisting of a central section capable of rotation of its axis only, and the side section, the oppositely movable slides in which the side sections are fitted, the spools carried by the side sections, and a lever for shifting the slides simultaneously, substantially as described. 14th. The combination of a series of sectional twist-ers, each consisting of a central section having the projecting heads and the side sections in contact with the central section, and having the segmental heads with their flat sides in contact with the heads of the central sections, the said heads of the central and side sections forming a complete circle when the sections are placed together side by side, substantially as described for the purpose set forth. 15th. In a wire fabric machine, the combination of a series of rotary twist-ers geared directly together for simultaneous operation, each twister having a central section capable of rotary movement only, and two side sections which are capable of a shifting movement independently of the central section in opposite directions simultaneously, whereby the said shifting sections of the twister are adjusted to register with the central sections of twist-ers on opposite sides of the same, substantially as described for the purpose set forth. 16th. In a wire fabric machine, the combination of a series of rotary twist-ers geared together for simultaneous operation, each twister comprising a central section capable of rotation on its axis only, and the shifting sections arranged on opposite sides of the central section, each side section having segmental heads which impinge upon the central section when the twister is rotated, substantially as described for the purpose set forth. 17th. In a wire fabric machine, the combination of a series of rotary twist-ers, each of which consists of two shifting sections capable of movement in opposite directions simultaneously, and a central section having rotary movement imparted thereto and interposed between the shifting sections to impinge upon the latter, when they align therewith and rotate the same, substantially as described. 18th. In a wire fabric machine, the combination of a series of rotary twist-ers, each of which consists of a central section held from endwise movement and capable of rotation on its axis only, and the side sections capable of shifting movement in opposite directions simultaneously, the side section of one twister being arranged on opposite sides of the central section thereof and impinging upon the latter to be rotated on their axis therewith, the twist-ers being capable of rotary

movement only when the shifting side sections thereof are in line with the central section, substantially as described for the purpose set forth. 19th. In a wire fabric machine, the combination of a series of rotary twist-ers, each twister comprising the shifting side sections provided with the segmental heads through which the warp wires are to be passed, and the central section disposed between the side sections and held from shifting movement, the central sections of the series of twist-ers being geared directly together and impinging upon the side sections when the latter are in line therewith, to rotate the said side sections, substantially as described for the purpose set forth. 20th. In a wire fabric machine, a series of sectional twist-ers, each comprising a central section, the central sections being geared together to be simultaneously rotated on their axis, and the shifting side sections adapted to align with the central sections to be rotated therewith, substantially as described for the purpose set forth.

No 28,586. Fanning Mill. (Turare-triebleur.)

Robert K. Flooter, Chatham, Ont., 1st March, 1883. 5 years.

Claim.—1st. In a fanning mill, the combination and arrangement of the deflecting board I, with the air chamber N, fans F, F, upper riddle R, smut board J and hopper K, said deflecting board I being arranged to conduct the air blast above the upper riddle and smut board, substantially as shown and described and for the purpose specified. 2nd. In a fanning mill, the combination and arrangement of the deflecting board I, with the air chamber N, fans F, F, upper riddle R, smut board J, hopper K, having valve V, shoe S, and hangers H, said deflecting board I being arranged to conduct the air blast above the upper riddle R and smut board J, substantially as shown and described and for the purpose specified. 3rd. In a fanning mill, the combination of the roller x, bearings z, serrated plate y and hinged board x, with the shoe s, hangers H, screens L, L, pins U, crank shaft A and connecting rod C, substantially as shown and described and for the purpose specified.

No. 28,587. Horse Collar. (Collier de cheval.)

Carl Block, Merrill, Wis., U.S., 1st March, 1883; 5 years.

Claim.—As an improved article of manufacture, a horse-collar composed of two sections formed of wood, having suitable fastening devices for their lower ends, the metallic face-plates on the lower portions thereof, the martingale loop secured to the lower end of one of the sections, the inner and outer plates C, D, the posts having apertures in their outer ends, and their inner ends threaded, and the bolts in the outer ends of the posts, substantially as specified.

No. 28,588. Meat Chopper. (Hache viande.)

John R. Philp, Toronto, Ont., 1st March, 1883; 5 years.

Claim.—A meat chopper constructed with five steel knives, less or more, secured in slots in the under edge of the cross-bars D or fingers d, by being closely fitted therein and soldered, substantially as shown and described.

No. 28,589. Railway Signal.*(Signal de chemin de fer.)*

John W. Harkom, Richmond, Que., 1st March, 1883; 5 years.

Claim.—1st. The combination, with the bar of a railway crossing gate, having a swinging lantern attached thereto, of a shield adapted to obscure said lantern on two of its sides, for the purpose set forth. 2nd. The combination, with the bar of a railway crossing gate, of a shield affixed thereto and having two wings, a lantern supported between said wings, and bearings to which said lantern is pivoted, substantially as and for the purposes described. 3rd. The combination, with the gate bar A, of the shield C having two wings C, C, strap D and a lantern pivoted to said shield, substantially as and for the purposes set forth.

No. 28,590. Adaptation to Cigars, Cigarettes, etc. (Disposition aux cigares, cigarettes, etc.)

Heinrich F. Riedel, Dresden, Germany, 1st March, 1883; 5 years.

Claim.—1st. A cover or wrapper adapted to serve as a case or carrier for a cigar or a cigarette during transport, and also as a mouth-piece for holding a cigar or cigarette whilst it is being smoked, substantially as described. 2nd. A cover or wrapper adapted to serve as a case or carrier for a cigar or a cigarette during transport, said case or cover having a contracted part at one end for holding a cigar or cigarette, whilst it is being smoked, substantially as described. 3rd. A cover or wrapper, serving as a case or carrier for a cigar or cigarette and as a mouth-piece, and comprising a tube having a contracted part of conoidal form at one end, substantially as described for the purpose specified. 4th. A cover or wrapper, adapted as a case or carrier for a cigar or cigarette and as a mouth-piece, formed with a contracted part at one end, and with a bent part or strip that acts as a spring to retain a cigar or cigarette within said cover or wrapper during transport, as a stop or abutment for the inner end of a cigar or cigarette, when the same is being smoked, substantially as described and for the purpose set forth. 5th. A cover or wrapper for a cigar or cigarette, comprising a tubular part A of uniform diameter, and a conoidal or contracted part B, substantially as described and for the purpose set forth. 6th. A cover or wrapper for a cigar or cigarette, comprising a tubular part A of uniform diameter, a conoidal or contracted part B and a bent strip A', substantially as described for the purpose set forth. 7th. A cover or wrapper formed internally with a contracted part, in combination with a cigar or cigarette formed with an enlarged end and adapted for use with said cover or wrapper, said contracted part being of a form corresponding with the enlarged end of said cigar or cigarette, substantially as described.

No. 28,591. Boot Jack. (Tire-botte.)

Peter Cross, Toronto, Ont., 1st March, 1888; 5 years.

Claim.—As a new article of manufacture, a boot jack made up of plate A, having feet B, B, and the curved bar C made in one therewith and forming a toe-rest, substantially as specified.

No. 28,592. Lazy Back for Carriage and Buggy Seats. (Dossier-appui pour sièges de voitures)

Daniel B. Murray, Youngstown, Ohio, U.S., 1st March, 1888; 5 years.

Claim.—1st. In lazy-backs for carriages and buggy-seats, the lazy-back consisting, in combination, of the skeleton parts A and B, both in form similar to the ordinary lazy-back, the former, or A, which is removable and carries the upholstery when trimmed, being somewhat the larger, and having upon its front side a depression or rabbet cut upward from the lower edge of dimensions to snugly clasp B therein, the end flanges formed by the depression being grooved by straight or bevelled lines upon the inner sides, and the latter or B, which is permanently attached to the seat, being of dimensions to fit in the depression in A and having rabbetted or bevelled ends to rest in the grooves in the end flanges of A, as a means of holding the two parts together, substantially as described in the foregoing specification and for the purpose therein expressed. 2nd. In lazy-backs for carriage and buggy seats, having a removable part carrying the upholstery, the vertical spring catch a attached at one end to the side of a removable skeleton back and therefrom, extending downward, terminating at its lower end in a head formed by a notch or shoulder in side, suitable to catch over the lower edge of the permanent bar B or part of the skeleton back locking the removable and permanent parts together, substantially as described in the foregoing specification and for the purpose therein expressed. 3rd. In lazy-backs for carriage and buggy seats, the lazy-back consisting in combination of the skeleton bars or parts A and B, both in form similar to the ordinary lazy-back, the former or A, which is removable and carries the upholstery when trimmed, being somewhat the larger, and having upon its front side a depression or rabbet cut upward from the lower edge of dimensions to snugly clasp B therein, and the latter or B, which is permanently attached to the seat, being of dimensions to snugly fit into the depression in A, the two parts being held together by means of the set screws s, s, which one near each end penetrate through A and enter or act against B, substantially as described in the foregoing specification and for the purpose therein expressed.

No. 28,593. Plough. (Charrue.)

William H. Ferrin, Montague, Ont., 1st March, 1888; 5 years.

Claim.—The combination of the beam A, the collar B, the holder C and the set-screw D, substantially as and for the purpose hereinbefore set forth.

No. 28,594. Plough Point. (Soc de charrue.)

Dudley J. Spaulding and Thomas Thistlewood, Black River Falls, Wis., U.S., 1st March, 1888; 15 years.

Claim.—The combination, with a plough point consisting of a body B, the upper surface whereof occupies one plane, and having a cutting edge C, and a wing D, which occupies a plane below the surface B, and having a channel E; at the juncture of the wing and body, a shoulder F, and a landside portion E', of a ploughshare A fitted into said channel and upon said wing D, and secured by a bolt H, a brace D' secured to the share at C, and a bar E connected to said brace and to the landside E', as described and shown.

No. 28,595. Telephony. (Téléphone.)

John A. Cabot and John R. Quinn, Ottawa, Ont., 1st March, 1888; 5 years.

Claim.—1st. In a telephone circuit, the interposition of a converter having two independent coils wound upon layers of magnetically insulated blanks, and the terminals of one coil connected with the local or primary circuit, and the terminals of the other coil with the line circuit. 2nd. A converter composed of H-shaped pieces of sheet metal, magnetically insulated and placed and held together, and the central part wound with two independent coils of wire, each having its own pair of terminals, substantially as set forth. 3rd. A converter composed of H-shaped and plain end pieces of sheet metal, magnetically insulated and placed and held together, and the central part between the heads wound with two independent coils of wire, each having its own pair of terminals. 4th. In a converter, the combination of the H-shaped levers or blanks C, magnetically insulated and placed and held together, the coil l corresponding to the primary or local telephone circuit, and having a pair of terminals, a coil k corresponding to the line circuit and having its own pair of terminals, substantially as set forth. 5th. In a converter, the combination of the H-shaped levers or blanks C, the plain strips C', corresponding to the heads of the blanks C, both of sheet metal magnetically insulated and placed and held together, a coil l of thick wire having its own pair of terminals, a coil h of fine wire over the coil l, and having its own terminals, substantially as set forth. 6th. In a converter, the combination of a series of thin H-shaped metallic leaves C, a series of plain strips C', both magnetically insulated and placed and held together, a coil of thick wire l having its own terminals, a coil of fine wire h, having its own terminals, the binding posts c, c', the straps c'' holding the bobbin c, c', l, h, to the base, and the base C''', substantially as set forth. 7th. In a telephone system, the combination of a transmitter T, battery B, receiver R, primary circuit L, connecting T, B and R, and passing in coils l over a series of H-shaped plates C and plain ends C', composed of sheet metal and magnetically insulated and placed and held together, line wire L' passing to earth and passing to coils h over the coils l, substantially as set forth. 8th. In a telephone system, the combination of the primary or local circuit L containing transmitter, battery and receiver, and connected to the terminals of a coil in a converter C, the line circuit L' connected to the terminals of another coil of

the same converter, and the converter C containing said independent coils wound upon a series of H-shaped plates and plain strips of sheet metal, magnetically insulated and placed and held together, substantially as set forth.

No. 28,596. Autographic Telegraph. (Télégraphe autographique.)

The Writing Telegraph Company, New York, N. Y., assignees of James H. Robertson, Rutherford, N.J., U.S., 1st March, 1888; 5 years.

Claim.—1st. In autographic telegraphs, the combination, with a receptacle containing a liquid forming an electrode, of an adjustable electrode immersed in the liquid, and means for moving or adjusting said adjustable electrode by the hand of the writer, substantially as described. 2nd. In an autographic telegraph, the combination, with a stylus or holder, of a receptacle containing a liquid included in an electric circuit, a movable electrode arranged therein, and connections between said holder and movable electrode so arranged that the movements of the former may cause the latter to be more or less immersed in said liquid, substantially as described. 3rd. In an autographic telegraph, the combination with a receptacle containing a liquid, of an electrode arranged to be immersed in the same, a stylus or holder and connections between said electrode and holder, substantially as described. 4th. In an autographic telegraph, the combination, with two receptacles containing a liquid, of a stylus or holder, and connections between said holder and receptacles so arranged that the movements of the holder will cause the electrode to be more or less immersed in the liquid, substantially as described. 5th. In an autographic telegraph, the combination, with two receptacles containing a liquid, of two electrodes arranged to be gradually immersed in the same, a stylus or holder and connections between said electrodes and holder, substantially as described. 6th. In an autographic telegraph, the combination, with a receptacle containing a liquid forming an electrode in an electric circuit, of a pivoted arm forming an electrode and immersed in the liquid, and a rod connecting said arm with a stylus or holder, substantially as described. 7th. In an autographic telegraph, the combination, with two receptacles containing a liquid and forming electrodes in an electric circuit, of two pivoted arms forming electrodes immersed in the liquid, and two rods connecting said arms with a stylus or holder, substantially as described. 8th. The combination, with a stylus or holder, of a receptacle containing a liquid included in an electric circuit, and connections between said holder and receptacles so arranged that the movements of the former may bring the immersed electrode toward and away from a plate in the liquid, to vary the resistance in the circuit and the strength of the current, substantially as described. 9th. The combination, with a receptacle containing a liquid and included in an electric circuit, of an electrode immersed in the same, a stylus or holder and connections between said electrode and holder, substantially as described. 10th. The combination, with two receptacles containing a liquid, of a stylus or holder and connections between said holder and receptacles so arranged that the movements of the holder will cause an electrode immersed in the liquid to be brought toward and away from a plate in the receptacle contained in the circuit, substantially as described. 11th. The combination, with two receptacles containing a liquid and included in an electric circuit, of a stylus or holder and sliding rods carrying electrodes suspended in said liquid, substantially as described. 12th. The combination, with two pivoted receptacles containing a liquid and included in an electric circuit, of a stylus or holder and connecting sliding rods operating electrodes suspended in said liquid so as to vary the resistance of the current, substantially as described.

No. 28,597. Car-Coupling. (Attelage de chars.)

Madison J. Lorraine, St. Louis, Mo., and Charles T. Aubin, New York, N.Y., U.S., 1st March, 1888; 5 years.

Claim.—1st. The combination of the U-shaped clutch-head pivoted at its centre, the draw-head r and the automatic locking pin k, for the purpose set forth. 2nd. The combination of the U-shaped clutch-head, the draw-head r, the pivot s, the slot or groove d, and the projecting pin d', for the purpose described. 3rd. The combination of the U-shaped clutch-head, the guide-groove s, the draw-head and the locking pin k, as described. 4th. The combination of the U-shaped clutch-head pivoted at the centre, the draw-head, the locking pin, the car body, the crank rod and the links, and the retaining lock, as described. 5th. The combination of the clutch-head having the grooves d' and g, and the holes e' and f, the draw-head having the holes e, f and g', and the pin d, the buffer b and the locking pin k, as described. 6th. The combination of the U-shaped clutch-head having the recess a, the locking pin k and the draw-head having the buttress a', as described. 7th. The combination of a clutch-head turning laterally on its pivot, and having an external arm designed to engage with a similar arm of an opposing clutch-head, and an anchor arm designed to engage with some locking mechanism, with a draw-head carrying a common gravity vertically moving automatic locking pin, s, substantially as described. 8th. The combination of two similar draw heads having U-shaped pivoted automatically opening clutch-heads and the locking pins, as described. 9th. The combination of the pivoted clutch-head having the raised ring u, with the draw-head having a corresponding sunken ring w, as and for the purpose described. 10th. The combination of the clutch-head a and the draw-head r, and the locking pin k, said clutch-head being pivoted to said draw-head and having the raised ring u and the recess a, and said draw-head having the buttress a' and also being shaped to receive the ring u, as and for the purpose described. 11th. The combination of the draw-head, the pivoted clutch-head and the locking pin, said locking pin resting upon the inner arm of the clutch-head when the clutch-head is opened, and riding upon said inner arm as the clutch-head is turned to be closed, as described. 12th. The combination of the draw-head, the pivoted clutch-head and the locking pin, said locking pin working vertically in the draw-head and resting upon the inner arm of the clutch-head when opened, riding upon said inner arm when the clutch-head is turned to be closed, and dropping to secure said clutch-head when closed, as described. 13th.

The combination of the clutch-head having the arm *l* with the buffing face *h*, with the draw-head having the wire *u* for the purpose of receiving the force of buffing blows and distributing it directly over the stem of the draw bar, as described. 14th. The combination of the clutch head having the shoulder *r*, with the draw-head having the opposing guard *r*, for the purpose of preventing a buffing-strain received by the clutch head from being received upon the hinge-pin *r*, as described. 15th. The combination of the clutch head with the draw head having the bevels *t*, for deflecting dirt and moisture and for protecting the pins *d* and *e*, as described. 16th. The combination of the draw heads carrying similarly constructed automatic gravity opening and locking clutch-heads, for the purpose of making an automatic coupling, as described. 17th. A car-coupling in which the outline of each member thereof is formed as described and shown in Fig. 1, namely with the curves A, B, G, D, E, F, G, H, I, J, K, L, M, N, the tangent C, D, E, F, G, H, J, K, L, M, N, O, and the line O A, as described and shown. 18th. A car-coupling with a clutch-head having a flat solid face at its outer end to receive the buffing-strain, in combination with a draw-head, substantially as shown and described. 19th. A car-coupler member of the vertical plain class described, the outline of whose forward end is the line A B C D E F G H I J.

No. 28,598. Burnishing Machine for Boots and Shoes. (*Brunissoir de cordonnerie*)

Simon Ross, jr., Linwood, Ohio, U.S., 2nd March, 1888, 5 years.

Claim.—1st. The combination, with the pitman 7 and its driving shaft of the arm 9 provided with the wings 16 and having a journal support upon the spring-tension-arm 10, with a bearing on guides 11, substantially as specified. 2nd. The combination, with the pitman 7 and its shaft, of the arm 9 provided with wings 16 and having a journal support upon the spring-tension arm 10, and the burnishing tool 13, supported on and carried by arm 9, substantially as specified. 3rd. The combination, with the pitman 7 and its driving mechanism, of the reciprocating arm 9 driven by said pitman, provided with segmental wings 16 and supported on the adjustable spring tension arm 10, substantially as specified.

No. 28,599. Quarter Boot for Horses. (*Bottine de cheval*)

George P. Coolidge, Antwerp, N.Y., U.S., 2nd March, 1888, 5 years.

Claim.—The herein described quarter-boot consists of the upper section D, provided with the straps *d*, *d* and buckle *d*, the lower section E provided with the straps *e*, *e* and buckle *e*, the short vertical strap F, the bent metal plate G, the strap H and the copper rivets I securing the section E, plate G and strap H together, substantially as specified.

No. 28,600. Horse Shoe. (*Fer à cheval*)

Mathew Stricker, Berlin, Ont., 2nd March, 1888, 5 years.

Claim.—The combination of the springs *b*, *b*, with the horse-shoe *a*, by the bolts *d*, *d*, substantially as and for the purpose hereinbefore set forth.

No. 28,601. Holdback. (*Ragot de limonière*)

Samuel Mirfield, Campbellford, Ont., 2nd March, 1888, 5 years.

Claim.—1st. The combination of bar A, provided edgewise with notches *a*, terminating in transverse holes *b*, and a loop *c*, having an end provided with a cam portion *c*, for engagement and disengagement with said holes and notches, when in a normal and abnormal position respectively. 2nd. The combination, with bar A, having notches *a* and holes *b* intersecting, of the loop *c* provided with a cam portion *c*, and a keeper D to retain said loop when disengaged from said notches, as set forth.

No. 28,602. Washing Machine. (*Machine à blanchir*)

William L. Gore, Plympton, and William H. Pierce, Forest, Ont., 2nd March, 1888, 5 years.

Claim.—The combination of the tub A, having internal cleats D, E, and A, cover B fixed below the rim A, section C, hinged to said cover and carrying a standard D, shaft E, provided at the inner end with a gear wheel F, shaft I journaled in a bearing H, and bridge J secured to the hinged section and bearing on a spiral spring K at one end, and having at the opposite end a disk M, provided with pins N, as set forth.

No. 28,603. Attachment for Sheaf Binding Harvesters. (*Dispositif aux moissonneuses lieuses à grain*)

James G. Martin, Parkville, Victoria, 2nd March, 1888, 5 years.

Claim.—The improved binder attachment, which enables the sheaf to be bound with a band spun from the outer stalks at its stubble end, and consisting essentially of a gathering hook or conical spinning worm and a travelling rake or comb, all arranged and assembled on an arm to which an intermittent motion is given, and which is caused to travel around the sheaf while it is being held stationary, substantially as herein described and explained and as illustrated in my drawings.

No. 28,604. Vehicle Wheel, (*Roue de voiture*)

George M. Hughes, Auburndale, Ohio, U. S., 2nd March, 1888, 5 years.

Claim.—1st. In a vehicle wheel, the combination of an apertured metal hub, provided with radial spoke notches upon its end, and longitudinal spoke notches extending therefrom into the aperture of the hub, wire spokes provided with longitudinal bonds upon their in-

ner ends and engaging into these notches, thimbles provided with longitudinal spoke notches for the bent end of the spokes and pressed into the aperture of the hub, arc caps formed integrally with said thimbles, and provided with radial spoke notches for the straight inner ends of the spokes, all substantially as described. 2nd. The combination, in a vehicle wheel, of single wire spokes provided with longitudinal bonds upon their inner ends, a metal hub provided with radial and longitudinal spoke notches to engage with said spokes, and combined thimbles and caps secured into the ends of the hub, said thimbles being tapering, and said thimbles and caps having radial and longitudinal notches corresponding with the hub, substantially as described. 3rd. In a vehicle wheel, the combination of the wire spokes B, provided with the hooks or bends *C*, the hub C, provided with the radial spoke notches *a* and longitudinal spoke notches *b*, the thimbles E and caps D, integrally combined and provided with radial spoke notches *f* and longitudinal spoke notches *e*, and the skein F, the parts being secured together, substantially as described.

No. 28,605. Device for Transmitting Power. (*Appareil de transmission du mouvement*)

Wallace H. Dodge, Mishawaka, Ind., U.S., 2nd March, 1888, 5 years.

Claim.—The transmitting rope E, the pulleys A, B and the slack take-up pulley C, combined with a snub-pulley D, placed between the said pulleys A, B, to take the slack and return it to the pulley C, as and for the purpose set forth.

No. 28,606. Spark-Arrester. (*Garde étincelle*)

Frank P. Ziegler, Abdera, Penn., U.S., 2nd March, 1888, 5 years.

Claim.—1st. In a spark arrester, the body A, adapted to be secured on the upper end of the stack, and having the sides thereof composed of screen, the flue D leading from the centre of the top of the said body, and the series of bands L arranged in the body having the inwardly inclined fingers thereon, constructed and arranged substantially as and for the purpose specified. 2nd. In a spark-arrester, the combination of the body A having the collar B at the lower end, to engage over the upper end of the stack, and the conical top C provided at the centre with an opening, the flue D attached to the said opening, and the series of bands L, arranged one above the other in the said body, and having the inwardly inclined fingers on the upper edges, each band being smaller than the band below it in the series, substantially as and for the purpose specified. 3rd. In a spark-arrester, the combination of the body A having the conical top C, flue D communicating with the centres of the top supports K, K, arranged in the body and converging toward the upper ends, and the bands L secured to the said supports, and having the inwardly inclined fingers on the upper edges thereof, for the purpose herein specified. 4th. In a spark-arrester, the body A having a conical top and screen sides, the funnel-shaped spark chamber G adjacent to the body, and having a screen top, the flue D leading from the top of the body to the spark chamber, and the flue I extending from the reduced bottom of the spark chamber, substantially as and for the purpose specified. 5th. In a spark-arrester, the body having the screen sides and a top provided with an opening, and the series of annular inward fingers M arranged in the body, substantially as and for the purpose specified.

No. 28,607. Car Brake. (*Frein de char*)

John W. Shotton and Thomas H. Barnes, Montreal, Que., 2nd March, 1888, 5 years.

Claim.—1st. In combination with a freight or other car, and in combination, a rod secured longitudinally underneath the car, with coupling devices at both ends, a link secured to the end of the long arm of brake lever and attached to the rod by two chains, one taken directly to the rod at a point beyond the truck beam, and the other taken round a sheave or pulley returned and attached to the rod, the whole operating as herein described, to put on the brakes when the rod is drawn upon in either direction. 2nd. In combination, freight cars provided with rods hung underneath them and secured to the ends of long arms of brake levers, both directly, and also by returned chains passing round sheaves, said rods being coupled together and to a similar rod under tender, and a steam cylinder under locomotive with its piston rod connected with rod under tender, all as herein set forth and for the purposes described.

No. 28,608. Evaporating Pan. (*Chaudière à évaporation*)

George O. White, West Ossipee (assignee of Harrington F. Thurston, Bartlett), N.H., U.S., 3rd March, 1888, 5 years.

Claim.—The combination of the evaporating pan, having the depending fire-box on its lower side formed of an inner and outer shell, providing a space between them, which communicates with the pan, the rear end of said fire-box being closed and provided with an opening L, and the front end thereof being open, the smoke-stack arranged in rear of the fire-box and fitted on opening L, the door frame O arranged on the front end of the fire-box, removable therefrom, and having the flanges R and the clip yoke or rod S, embracing the rear side of the smoke-stack and having its arms extending forward through the flanges R, and provided with clamping nuts T, thereby securing both the smoke stack and the door frame in position, substantially as described.

No. 28,609. Harvester. (*Moissonneuse*)

The Sarnia Agricultural Implement Manufacturing Company (assignee of Samuel D. Maddin), Sarnia, Ont., 3rd March, 1888, 5 years.

Claim.—1st. The combination, in a mower, of a main frame supported by the axle, a cutter-bar frame and an inclined intermediate frame, pivoted to the cutter-bar frame adjacent to one wheel, and to the main frame adjacent to other wheel, with a crank-shaft at the

junction of the cutter and inclined frame, and a driving chain extending from said crank-shaft to a driving wheel, substantially as described. 2nd. In a mower, a main frame, turning on the axle, a cutter-bar frame, intermediate inclined frame pivoted to the main and cutter frames, with a crank shaft connected with the cutter-bar and on a line with the pitman connection with the cutter bar, substantially as described. 3rd. The combination, with the axle, two supporting wheels, main frame swinging upon the axle, cutter-bar frame, and intermediate inclined frame, pivoted to the cutter-bar frame and to the main frame in front and at the rear of the axle, substantially as described. 4th. In a reaping machine, the combination, with its axle and a main frame pivotally mounted thereon, of a cutter-bar frame and an intermediate frame pivotally secured to both main and cutter frames, and consisting of laterally extending bars, one of which crosses the other, substantially as described. 5th. In a reaping machine, the combination, with its axle and a frame pivotally mounted thereon, of a second frame pivotally secured to said frame, and consisting of laterally extending bars, one of which is secured to the frame in rear of the axle, and the other in front thereof, one of said bars crossing the other, substantially as described. 6th. In a reaping machine, the combination of its axle and a frame pivotally mounted thereon, of a second frame on which is pivotally mounted the shoe at the end of the cutter-bar frame, said second frame being secured to the first named frame through laterally extending bars, one of which crosses the other and is secured to said frame in rear of the axle, and the other in front thereof, substantially as described. 7th. In a reaping machine, the combination, with the axle B carrying a driving bevelled wheel H, and upon which is supported the frame C and tongue D of the machine, of a frame G pivotally mounted upon said axle, between said driving wheel and the frame C, and connected with the cutter-bar, substantially as described. 8th. The combination, with the axle B carrying a driving bevelled wheel, and a frame G pivotally supported upon said axle, of a bracket K supporting the shoe and pitman crank-shaft, and means, substantially as described, for communicating the rotation of the driving wheel to said crank shaft, the said bracket being pivotally secured to the frame G, substantially as described. 9th. The combination, with the bracket K, provided with recessed bearings 33 and 34, of a shoe pivotally supported by said bracket and carrying a sleeve 19 adapted to the socket in one of the bearings, and which supports the crank-shaft for driving the pitman, substantially as described. 10th. The combination, with the frame K provided with bearings for pivotally supporting the shoe, of the crank-shaft supported by one of said bearings, and having secured to its opposite ends a sprocket-wheel and a crank disk, whereby the shoe and frame are held together, substantially as described. 11th. The shoe M provided with a depression extending below the crank, substantially as and for the purpose described. 12th. The combination of the axle B, a frame G carried by said axle, and a lever for varying the inclination of said frame, and a shoe and bracket K pivotally supported from said frame, substantially as described. 13th. The combination, with a cutter-bar frame, main frame and connecting frame, of a shoe at the junction of the cutter-bar and connecting frame, and bearings for a crank-shaft on said shoe in line with the pitman connection with the cutter bar, substantially as described.

No. 28,610. Freight Car Door.

(*Porte de char à marchandises.*)

Francis G Susemihl, Detroit, Mich., U.S., 3rd March, 1888; 5 years.

Claim.—1st. In freight car doors, a guide rail provided with a bend or incline in the middle and having its straight portions arranged parallel or nearly so with the car, but on different planes with each other, substantially as described. 2nd. In freight car doors, the combination, with the guide rail having an incline or bend on the front end and one in the middle, and two straight portions arranged parallel or nearly so to the car, but in different planes to each other, of front and rear shoes or hangers having their guide grooves to correspond respectively to the straight portions of the guide rail, substantially as described. 3rd. In freight car doors, the combination, with the guide rail having a front and rear portion arranged in different planes parallel or nearly so with each other and to the side of the car, of front and rear shoes or hangers having their guide grooves arranged to correspond respectively with the front and rear portion of the guide rail, whereby the door runs parallel to the side of the car, substantially as described. 4th. In freight car doors, the combination, with the guide rail having a bend in the front and one in the middle, of front and rear shoes or hangers having their guide grooves enlarged to run over the bent portions of said rail, substantially as described.

No. 28,611. Potato-Digger. (*Arrache-patates.*)

John Butman, Milan, Ohio, U.S., 3rd March, 1888; 5 years.

Claim.—1st. In a potato-digger, the double flanged sprocket-wheel I having teeth on one side in the radial lines of its centre, and on the other one an incline plane, in combination with the link belt J and enlarged sprocket-wheel M, M', and driving-wheels, substantially as described and for the purpose set forth. 2nd. In a potato-digger, the pitman U, U', provided with elongated slots at one end, for the reception of the crank pins, and jointed at the lower ends of the arms g and operated by means of a link belt and sprocket-wheels, in combination with the vibrating sifter hinged to the rear of the scraper and operating conjointly therewith, constructed and arranged substantially as described and for the purpose specified. 3rd. In a potato-digger, the link belt K in connection with the sprocket-wheels on the shafts H, S and cranks, in combination with the pitman jointed to the sifter with a hinged attachment to the scraper having prongs projecting over the front-portion of the scraper, and means for operating the same, as and for the purpose set forth.

No. 28,612. Friction-Clutch and Hoist.

(*Embrayage à friction et élévateur.*)

Otto Flohi, Buffalo, N.Y., U.S., 3rd March, 1888; 5 years.

Claim.—1st. The combination of a driving and a driven part, one of

said parts formed with an overhanging flange, a divided friction ring within said flange and so connected to the other of said parts that both must rotate together, the axial shaft upon which said rotating parts are mounted, a longitudinally moving knee-piece on said shaft, and said sections and knee-piece formed with opposite sockets, inclined toggle-arms with their opposite ends entering said opposite sockets and abutting directly against the sections and knee-piece respectively, whereby, on advancing said knee-piece, the friction ring is expanded by the direct and unyielding thrust of said toggle-arms, and retracting springs arranged to contract said ring and thereby release the clutch. 2nd. The combination of a driving and a driven part, one of said parts formed with an overhanging flange, a divided friction-ring within said flange and so connected to the other of said parts that both must rotate together, the axial shaft upon which said rotating parts are mounted, a longitudinally moving knee-piece on said shaft, and said sections and knee-piece formed with opposite sockets extended laterally in planes perpendicular to the axis of rotation, inclined toggle-arms or plates broadened laterally to a width corresponding to the length of said sockets, and arranged with their opposite ends entering said opposite sockets and abutting directly against the sections and knee-piece respectively, whereby, on advancing said knee-piece, the friction-ring is expanded by the direct and unyielding thrust of said toggle-arms, and retracting spring arranged to draw back the sections of said ring and release the clutch. 3rd. The combination of a driving and a driven part, one of said part formed with an overhanging flange, a friction ring within said flange so connected to the other of said parts that both must rotate together, and diametrically divided into two sections, the axial shaft upon which said parts are mounted, four inclined toggle-arms arranged radially with their outer ends bearing against the sections of said ring, two against one section and two against the other, and a knee piece movable longitudinally on said shaft and against which the inner ends of said toggle-arms bear. 4th. The combination of a driving and a driven part, one of said parts formed with an overhanging flange, a friction ring arranged within said flange and diametrically divided into two sections, each of which is formed at its middle with a socket, driving pins entering said socket and carried by the other of said parts, whereby the sections are forced to rotate with the latter part, the axial shaft upon which said parts are mounted, four inclined toggle-arms arranged radially with their outer ends bearing against the sections of said ring, two against each section and on opposite sides of said socket thereon, and a knee-piece movable longitudinally on said shaft and against which the inner ends of said toggle-arms bear. 5th. The combination of a driving and a driven part, one of said parts formed with an overhanging flange, a friction-ring arranged within said flange and so connected to the other of said parts that both must rotate together, and divided into sections, retracting springs applied to the sections of said ring and acting to draw them together, and thereby contract the ring, toggle-arms arranged at an inclination with their outer ends bearing against the sections of said ring, a knee-piece movable longitudinally and against which the inner ends of said toggle-arms bear, and mechanism for longitudinally moving said knee-piece. 6th. The combination of a driving and a driven part, one of which is formed with an overhanging flange, a divided friction ring within said flange and so connected to the other of said parts that they must both rotate together, guiding devices upon the respective sections of said ring adapted to guide them in their expanding and contracting movements, inclined toggle-arms with their outer ends bearing against the sections of said ring, a longitudinally movable knee-piece against which the inner ends of said toggle-arms bear, and retracting springs acting to contract said ring. 7th. The combination of driving and driven parts, one of which is formed with an overhanging flange, a divided friction-ring within said flange and so connected to the other of said parts that both must rotate together, a longitudinally movable knee-piece, inclined toggle-arms with their outer ends bearing against the sections of said ring, and their inner ends against said knee-piece, and removable blocks in which the ends of said toggle-arms are socketed. 8th. The combination of a driving and a driven part, one of which is formed with an overhanging flange, a divided friction-ring within said flange and so connected to the other of said parts that both must rotate together, a longitudinally movable knee-piece, inclined toggle-arms with their outer ends bearing against the sections of said ring and their inner ends against the said knee-piece, and adjustable socket-blocks, each interposed between one end of one of said toggle-arms and the part against which it bears, and angularly socketed in said latter part. 9th. The combination of driving and driven parts, one of which is formed with an overhanging flange, a divided friction ring within said flange and so connected to the other of said parts that both must rotate together, a longitudinally movable knee-piece, inclined toggle-arms with their outer ends bearing against the sections of said ring and their inner ends against said knee-piece, retracting springs acting to contract said ring and retract said knee-piece, and a stop for limiting the retractile movement of the knee-piece. 10th. The combination of driving and driven parts, one of which is formed with an overhanging flange, a divided friction ring within said flange, a knee-piece and inclined toggle-arms for expanding said ring, an annularly grooved sleeve connected to said knee-piece, a longitudinally moving slide engaging the groove in said sleeve, and an operating screw engaging said slide and adapted when rotated to impart longitudinal movement thereto, and thereby to engage or release the clutch. 11th. A clutch operating mechanism consisting of the combination of cap M formed with walls m, m', top plate N fixed thereon, yoke Q fixed thereto, slide P confine I between said walls and beneath said top plate, and operating screw R engaging said yoke and swivelled to said slide.

No. 28,613. Thill Equalizer for Road Carts.

(*Boîte à égalizer pour voiture.*)

James Percy, Chicago, Ill., U.S., 3rd March, 1888; 5 years.

Claim.—In mechanism for equalizing the horse motion of two-wheeled vehicles, the two-part thills A, B, with overlapping joints J, and the part A formed of less depth than the part B, and provided with the stops d, m, in combination with the slotted plate D engaging the said stop, the draft-spring H E and the clip C G, as specified.

No. 28,614. Evaporator. (Evaporateur.)

Soth W. Lowell, Belfast, N.Y., U.S., 3rd March, 1888. 5 years.

Claim.—1st. In an evaporator, the combination, with the sections of steam pipes and the case therefor open at one side, of inclined deflecting plates removably connected to the underside of each section and adapted to be inserted and removed through the open side of the case, substantially as set forth. 2nd. In an evaporator, the combination, with the casing, of the vertical series of sections of detachably connected horizontal steam-pipes, and an imperforate deflecting plate removably secured to the underside of each section, whereby a section of pipes with its deflecting plate may be removed together at any time, or the plate alone removed as may be desired, substantially as set forth. 3rd. In an evaporator, the combination, with the vertical series of sections of horizontal steam pipes, of the sleeves *k* mounted upon the outer pipe of each series, and having on their sides the arms *l* parallel with the pipes, the transverse strips *n* resting at their outer ends on the arms *l*, clips *K* at the rear ends of the strips *n*, engaging the inner pipe *o* each section, and the deflecting plate supported on said strips, substantially as set forth.

No. 28,615. Machine for Engraving and Carving Buttons. (Machine à graver et découper les boutons.)

Caesar R. Bannhr, West Cheshire, Conn., U. S., 3rd March, 1888; 5 years.

Claim.—1st. The combination of the table D with the indexing device around the column or shaft A, for the purpose of bringing the table in any desired relation with any of the spindles *a*, *a1*, *a2*, as herein shown and described. 2nd. The combination of the table or arm D having an indexing device around the shaft A, the box E having within it the index F, for the purpose of bringing any desired surface of the article in the chuck *c* under the spindles *a*, *a1*, *a2*, as and for the purpose herein shown and described. 3rd. The combination of the table or arm D having an indexing device around the shaft A, box E having within it a horizontal rotary index F, and the vertical circular index G, as herein shown and described and for the purpose specified. 4th. The combination of the table or arm D having an indexing device around the shaft A, and box E having within it the index F, in a horizontal relation to the vertical index G, in relation to the spindles *a*, *a1*, *a2*, with cutters or grinders *b*, *b1*, *b2*, for the purpose of cutting or grinding designs upon articles, as herein fully shown and described. 5th. The combination, in an indexing device, of the pins *j*, springs *i* and *h*, box E and cylinder F provided with holes *k*, substantially as and for the purpose set forth. 6th. The combination of the cam or eccentric groove S with a slide P, lever Q, sleeve N and spring *k*, pitman Q and spring *h*, for the purpose of changing the index while the arm D is moved from one spindle to another, all for the purpose herein set forth and described. 7th. The combination of a horizontal spindle *b* with a vertical spindle *a*, in which the vertical spindle forms a plunger or slide for the horizontal spindle, being set by means of the pin *m*, as herein set forth and described.

No. 28,616. Machine for Coring, Paring and Quartering Apples. (Machine àvider, peler et trancher les pommes.)

William E. Blakely, Brighton, Ont., 3rd March, 1888. 5 years.

Claim.—1st. A tube T fastened to one end of a shaft, substantially as and for the purpose set forth. 2nd. A plunger Y, P, substantially as and for the purpose set forth. 3rd. A lever arm J, substantially as and for the purpose set forth. 4th. A rack I, substantially as and for the purpose set forth. 5th. A double-edged knife O, moving forward and backward through the apple lengthways of the core, substantially as and for the purpose set forth. 6th. A brake Z, substantially as and for the purpose set forth. 7th. The combination of a set of cogs on the wheel E, and a pinion G, substantially as and for the purpose set forth. 8th. The combination of a loose pinion F, with dog attached, and a ratchet wheel *i*, substantially as and for the purpose set forth. 9th. The combination of a plate *r*, with spring *t* attached, a slide W and a slide Y, with plate N attached, substantially as and for the purpose set forth. 10th. A part cog-wheel B, substantially as and for the purpose set forth. 11th. A knife-carrier M, moving forward and backward lengthways of the apple, substantially as and for the purpose set forth. 12th. A crank R, substantially as and for the purpose set forth.

No. 28,617. Grain Binder. (Lieuse à grain.)

The Sarnia Agricultural Implement Manufacturing Company (assignee of Samuel D. Maddin), Sarnia, Ont., 3rd March, 1888. 5 years.

Claim.—1st. The frame of the binder supported upon two wheels, and consisting of a sleeve carried by the axle and bars F, D, the former extended to constitute the overhanging arm supporting the knotting devices, and the strip E consisting of the horizontal and vertical portions, all substantially as set forth. 2nd. The combination of the compressor and discharge arms, needle and knoter devices with a wheel N, and connections with the said wheel, whereby the batter is made the means of operating all the parts, substantially as set forth. 3rd. The combination, with the knoter devices, compressor and discharge arms and needle, of the wheel N having a crank pin connected by a link with the needle, and provided with racks 23, 26, the mutilated crank pinion Q connected with the knotting devices, and the mutilated pinion S connected with the compressor arms, substantially as set forth. 4th. The combination, with a wheel N, of a continuously rotating wheel S, and connections between said wheels operated by the grain being bound, whereby the wheel N is thrown into and out of gear with the wheel S, substantially as described. 5th. The combination, with a continuously rotating wheel S, of a wheel N and a clutch interposed between said wheels operated by the grain being bunched, substantially as described. 6th. The combination, with a continuously rotating wheel

S and a wheel N, of a foot V operated by the grain being bunched, and connections between said foot and wheel S, whereby the wheel N is intermittently rotated, substantially as described. 7th. The combination, with a continuously rotating wheel S and a wheel N, for operating the compressor arm, needle and knoter devices, of connections between said wheels operated by the grain being bunched, to cause the wheel N to be started when the bundle is compressed to the desired extent, substantially as described. 8th. The combination, with a continuously rotating wheel S and a wheel N for operating the compressor arm, needle and knoter devices, of a foot V operated by the grain being bunched, and connections between said foot and wheel S, whereby the wheel N is started on the bundle being compressed, substantially as described. 9th. The combination, with the compressor and discharge arms rotated by a mutilated wheel 5, of a wheel N provided with a rack 23 and a plain face 27, for intermittently rotating said wheel 5, and the compressor and discharge arms, substantially as described. 10th. The combination, with a needle K pivotally mounted, of an intermittently rotating wheel N and link 20, for reciprocating said needle, substantially as described. 11th. The combination, with a continuously rotating wheel S, a wheel N and a pivotally mounted needle K, operated by said wheel N, of a foot V operated by the grain being bunched, and connections between said foot and the wheel S, whereby the wheel N is started on the bundle being compressed, substantially as described. 12th. The combination, with a continuously rotating wheel S, provided with two or more shoulders *z*, of a wheel N, a lever T pivoted thereto and having a stud 30, for engagement with the shoulders of said wheel S, a foot V, and connections between said foot and lever, substantially as described. 13th. The combination, with the platform U, needle and packers, of a movable frame W and means for elevating it, whereby the incoming grain is held out of the path of the packers while the needle is raised, substantially as described. 14th. The pivoted frame W, arranged to be struck and elevated by the needle on its ascent, substantially as described. 15th. The combination of the needle compressor arm, discharge arms, of a wheel N connected to operate the said parts, a continuously driven wheel S and intermediate clutch, and the compressor arm and knoting devices connected to be driven by the wheel S, substantially as described. 16th. The combination of the wheels N and S and intermediate clutch devices, the knoter devices, mutilated wheel Q, and lever P connected with the wheel Q, and knoter devices, substantially as described. 17th. The combination, with the wheel R, driven from the driving wheel, wheel 41 on the packer operating shaft, and wheel 42 on a shaft 43, with connections to operate the cutting mechanism, of a chain passing round said wheels, a wheel S driven by said chain, and adjustable connections for throwing the wheel S into and out of connection with the needle, and knoter operating devices, substantially as described. 18th. The combination, in a binder, of a shaft carrying a compressor arm, and means for intermittently rotating the shaft, substantially as described. 19th. The combination, in a binder, of a shaft carrying a discharge arm, and means for intermittently rotating the shaft, substantially as described. 20th. The combination, in a binder, of a shaft carrying both the compressor and discharge arms, and connections whereby said shaft is intermittently rotated, substantially as described. 21st. The packer arms, combined with a double cranked shaft, and suspended at the forward ends by pendant links, substantially as described. 22nd. The combination, with the packers M, M1, of a supplemental packer M2, substantially as and for the purpose set forth. 23rd. The combination, with the platform shaft packers, needle, compressor and discharge arms and knotting mechanism, of a bracket carried by the shaft, and supporting devices connected to drive the needle, compressor and discharge arms, packers and knotting devices, substantially as described. 24th. The combination, with two supporting wheels and intermediate shaft, of the packing, binding, discharge and knotting devices arranged above and forward of the shaft, substantially as described. 25th. The platform, knotting, packing, binding and discharge devices carried by a frame supported by two wheels, said frame flexibly connected with the cutter frame, substantially as described. 26th. The combination of the frame of the binder supported upon two wheels, the cutter frame B2 and the connecting arms, and a shaft 64 having bearings near the front edge of the cutter frame and having an arm at the end, and supporting the axle of the end wheel in line with the axle of the cutter frame, and means for rocking the shaft 64, substantially as set forth. 27th. The combination, with the harvester frame connected to the binder frame and traveling therewith, of a longitudinal bar located near the forward part of said harvester frame and having a rearwardly extending arm and axle for a bearing wheel mounted laterally about in line with the wheels of the binder, substantially as described. 28th. The combination, with a harvester frame connected with the binder frame, of a longitudinal bar 64, mounted near the front of the harvester frame and having a rearwardly extending arm and axle for a bearing wheel, and a lever connected to said bar, for raising and lowering the front of said harvester frame, substantially as described. 29th. The combination, with travelling elevating aprons 84, 86, of the wheels 92, 96 and 97, and a chain connecting said wheels for driving said aprons, substantially as described. 30th. The combination, with a travelling apron 84, of a second apron 86 pivotally mounted so as to adjust itself to the quantity of grain being carried by said apron, substantially as described. 31st. The combination, with the platform U, of a vertically arranged shifting belt, and means under the control of the driver for changing the position of said belt, substantially as described. 32nd. The combination of the binder frame, mounted on two wheels of a cutter frame, connected to the binder frame by pivoted bars or links 60, 60, and an elevator frame pivoted to the cutter frame and extending upward above the platform, substantially as described. 33rd. The combination, with the rollers for the upper and lower elevator bolts, of a frame carrying the lower elevator rollers and another frame carrying the upper rollers and suspended to the lower frame at the upper end, substantially as described. 34th. The combination of the elevator frame, carrying the upper and lower elevator rollers on shafts provided with sprocket wheels, a driving chain passing round a sprocket in the shaft of the upper elevator roller, back of a sprocket on the upper shaft of the lower elevator, and to a lower sprocket wheel, and connections for driving the latter from the binder, substantially as described. 35th. The

combination, with the knottor, of a reciprocating finger 130 and operating devices, substantially as and for the purpose set forth. 36th. The combination, in a grain binder, of a table or platform, a knitting device supported above the table, a wheel, and gears whereby the reciprocation of the wheel operates the knottor, and a lever connected at the upper end to the wheel, and at the lower end to driving mechanism below the platform, substantially as described. 37th. The combination of the knottor, shaft carrying the knottor, a wheel gearing with said shaft and a vibrating lever connected to reciprocate the wheel, all arranged and supported above the table, substantially as set forth. 38th. The combination of the shaft and wheel geared together, a knottor carried by the said shaft, and a cutter carried by the wheel, substantially as described. 39th. The combination of a knottor, shaft, wheel, gears, and a guard carried by the wheel, substantially as set forth. 40th. The combination, with the knottor, shaft carrying the same, and wheel and gears, of a guard 41 carried by, or forming part of, the said wheel in proximity to the knottor, substantially as set forth. 41st. The combination, with the knottor and shaft carrying the same, provided with a pinion, of a wheel carrying a rack gearing with said pinion, and provided with a finger for tightening the knot, with a projection for throwing the loop out of the looper, and with a cutter, substantially as set forth. 42nd. The combination of the knottor, notched disk Q, wheel geared with the knottor shaft, cam upon the wheel and connections, substantially as described, between the cam and disk to rotate the latter step by step, as the wheel is rocked, substantially as set forth. 43rd. The disk Q, provided with a ratchet r, in combination with an arm R extending beyond the disk and carrying a spring pawl engaging with said ratchet, substantially as set forth. 44th. The combination of the disk Q, ratchet lever and pawl and a shaft w, operating cam and arm carried by the shaft, and rod connecting the said arm to the pawl lever, substantially as set forth. 45th. The combination, with the knottor and shaft carrying the same, and with the notched disk, of a wheel geared with the said shaft and provided with a cam, and connections between the cam and the disk, whereby the knottor and disk are both operated by the reciprocation of the wheel, substantially as described. 46th. The notched disk, bevelled at both sides at the edge, in combination with a plate R having a recess or channel receiving the edge of the disk, substantially as and for the purpose set forth. 47th. The combination of the platform, overhanging arm, knottor carried by said arm, lever pivoted to the arm and connected to devices for operating the knottor, and shaft below the table provided with a crank and rod, connecting the crank to the lower end of the said lever, substantially as set forth. 48th. The combination, with the needle shaft and needle, of a compressor hung to and swinging upon the needle shaft, substantially as set forth. 49th. The combination of the table, cord-tying and severing devices above the table, needle carried by a shaft below the table, and discharge arm also carried by a shaft below the table, substantially as set forth. 50th. The combination of the binder frame, wheels A, A, supporting the said frame, a platform supported by the frame and extending over one of the wheels, and a binder supported by the frame and provided with discharge arms arranged to discharge the bound bundles from the platform and over the wheel, substantially as set forth. 51st. The combination of the wheels A, A, binding table arranged above and projecting over one of the wheels, a frame supported by the wheels below the platform, and supporting the driving shafts and their connections, an arm projecting above the platform and supporting the cord knotting and cutting devices, substantially as set forth. 52nd. The combination of the supporting wheels A, A, frame supported by the said wheels, driver's seat arranged at the rear of said wheels, and a binder arranged directly in front of the driver's seat and in line with the driver and the horses, substantially as set forth. 53rd. The combination of the supporting wheels, frame, pole extending forward from the frame, driver's seat at the rear of the frame, and binder provided with an overhanging arm, and knottor devices carried by the said arm upon the end opposite the driver and in line with the driver and the team, substantially as set forth.

No. 28,618. Machine for Upsetting Tires.
(*Machine à refouler les bandages.*)

Isaac N. Wright, Greensburg, and James S. Harper, Sardina, Ind., U.S., 3rd March, 1888; 5 years.

Claim.—1st. In a tire-upsetting machine, the combination, with a rigid plate A, movable plate D, arms C and E, and a lever F, of brackets G formed with serrated upper faces, serrated eccentric disks L and means, substantially as described, for operating said disks, as specified. 2nd. In a tire-upsetting machine, the combination, with a rigid plate A, movable plate D, arms C and E, and lever F, of brackets G, each formed with a transverse cylindrical groove in its upper face, serrated blocks, each provided with a transverse cylindrical rib upon its back adapted to fit into said grooves, serrated eccentric disks L and means, substantially as described, for operating said disk, as shown and described. 3rd. In a tire-upsetting machine, the combination, with a rigid plate A, movable plate D, arms C and E, lever F and bracket G, of serrated eccentric disks L, arms C connected to said disks, bar P to which said arms are pivoted, and lever R, substantially as and for the purpose set forth. 4th. In a tire-upsetting machine, the combination, with the rigid plate A, movable plate D, arms C and E, and lever F, of bracket-plates secured to the rigid and movable plates, brackets G, eccentric disks L secured to said bracket-plates, the foot T provided with a slotted arm adapted to slide upon the lip W, and means, substantially as described, for operating said foot and disks, for the purpose set forth. 5th. In the within described tire-upsetting machine, the combination, with the bracket G, disks L, arm C, bar P, foot T and lever R, of the pawl X, arm B, slotted bar Q and the screw-bolt Q, substantially as and for the purpose set forth.

No. 28,619. Harvester. (*Morissonneuse.*)

The Massey Manufacturing Company, Toronto, Ont., (assignee of William N. Whiteley, Springfield, Ohio, U.S.), 3rd March, 1888, 5 years.

Claim.—The combination, in a harvester, of a main axle and a main wheel mounted loose thereon, the segments G on the frame, the

pinions E, E', or their equivalents, on said axle, the worm-wheel F secured to said axle, the worm H mounted on the telescopic shaft J, K, whereof the part K slides but does not turn within the part J, substantially as and for the purpose hereinbefore set forth.

No. 28,620. Harrow. (*Herse.*)

The Stoddard Manufacturing Company, (assignee of Henry C. Lowe, Administrator of the estate of E. Fowler Stoddard, Dayton, Ohio, U.S., 3rd March, 1887, 5 years.

Claim.—1st. In a wheel or disk harrow, the combination, with the main frame, of the disk gangs hinged or pivoted thereto on each side of its centre, and connecting mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and vice versa, substantially as described. 2nd. In a wheel or disk harrow, the combination, with the main frame, of two or more sets of disk gangs hinged or pivoted thereto on each side of its centre, and connecting mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and vice versa, and whereby the shifting of one gang causes the simultaneous shifting of its adjacent connected gang, substantially as described. 3rd. In a wheel or disk harrow, the combination, with the main frame, of two or more sets of disk gangs hinged or pivoted thereto on each side of its centre, and connecting mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and vice versa, and whereby the shifting of an inner gang causes the simultaneous shifting of its adjacent outer gang, substantially as described. 4th. In a wheel or disk harrow, the combination, with the main frame and the disk gangs hinged or pivoted thereto on each side of its centre, of an independently backwardly and forwardly movable doubletree and connecting mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and vice versa, substantially as described. 5th. In a wheel or disk harrow, the combination, with the main frame and two or more sets of disk gangs hinged or pivoted thereto on each side of its centre, of an independently, backwardly and forwardly movable doubletree, and connecting mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and vice versa, and whereby the shifting of one gang causes the simultaneous shifting of its adjacent connected gang, substantially as described. 6th. In a wheel or disk harrow, the combination, with the main frame and two or more sets of disk gangs hinged or pivoted thereto on each side of its centre, of an independently, backwardly and forwardly movable doubletree, and connecting mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and vice versa, and whereby the shifting of the inner gangs causes the simultaneous shifting of the outer gangs, substantially as described. 7th. In a wheel or disk harrow, the combination, with the main frame and the disk gangs hinged or pivoted thereto on each side of its centre with connecting mechanism, of an independently, backwardly and forwardly movable doubletree, and locking mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and vice versa, and whereby said disk gangs can be locked in any of their adjusted positions, substantially as described. 8th. In a wheel or disk harrow having two or more sets of disk gangs on each side of its centre, chains connecting the beams of said gangs on each side and passed around sheaves journalled to the main frame, substantially as described, whereby the shifting of the inner gangs causes the simultaneous shifting of the outer gangs. 9th. In a wheel or disk harrow, the combination, with the main frame and a convertible pole and thills secured thereto, of backwardly and forwardly movable hitching mechanism, substantially as described, whereby a perfect centre draft is obtained whether two or three horses are used. 10th. In a wheel or disk harrow, the combination, with the main frame and adjustable disk gangs hinged thereto, of convertible pole and thills secured to the main frame, and hitching mechanism, whereby a perfect centre draft is obtained whether an odd or an even number of horses abreast are hitched thereto.

No. 28,621. Manufacture of Cylindrical Brushes and Apparatus therefor. (*Fabrication des pinceaux et appareil pour cet objet.*)

Frederick J. Page and Charles F. Page, Norwich, Eng., (assignees of Jean V. Gane, Paris, France), 3rd March, 1888; 5 years.

Claim.—1st. In an apparatus such as described, and as a means of suspending the stock in varying positions equidistant from each other, the combination, with the extensible rod J and its operating worm E and worm wheel F, of the pitch chain mechanism consisting of the pitch wheels C and C', pitch chain C', sleeve Q, spring catch Q', rowed rod P and stop nut P', or their respective mechanical equivalents, the whole constructed and operating substantially as and for the purpose specified. 2nd. In an apparatus such as described, the means for raising and lowering the stock consisting of an extensible rod such as H I J, pulley F and connecting wire, substantially as specified. 3rd. In an apparatus such as described, an extensible rod consisting of a solid internal rod, surrounding tubes telescopically arranged and supported in a gimbal frame, and a swivelling wire for connecting with the controlling pulley, substantially as specified. 4th. In an apparatus such as described, the combination, with two extensible rod and pitch chain mechanism, of the sliding bracket B and slide K, substantially as and for the purpose specified. 5th. In an apparatus such as described, the combination, with the slide K, of the adjustable rest N, substantially as and for the purpose specified.

No. 28,622. Lathe. (*Tour.*)

The Dodge Manufacturing Company, (assignee of Wallace H. Dodge and George Philion), Mishawaka, Ind., U.S., 3rd March, 1888, 5 years.

Claim.—1st. In a machine for turning the rums and boring the hubs

of pulleys and the like, the guideway F transverse to the axis of rotation, and the scribing bar mounted to move on the table v, in a guideway parallel with said axis, combined with the carriage P, mounted to move on said guideway F transverse to the axis of rotation, and the tool-stock H fitted to move on the carriage P in the plane of, and parallel with, said axis. 2nd. The reciprocating tool-stock H provided with the cog-track n, and the hand-wheel p provided with the pinion q, combined with the worm-gear r on the shaft of said pinion, and the worm-rever h mounted on the movable plate u, substantially as set forth. 3rd. In a boring and turning machine, a mandrel, a tool-carriage adapted to move in a direction transverse to the axis of revolution of the mandrel, and a scribing stock having movement parallel with said axis of revolution, combined with a scribing-blade adjustable on said stock, toward or away from said axis of revolution, for the purpose set forth. 4th. A machine for turning pulley-rims, boring the hubs, and the like, comprising a bed-plate A, two pillars B and C, relatively adjustable on said bed-plate, the pillar B being provided with a mandrel, rotating scroll-plate and face-plate f, provided with bars h, radially adjustable thereon and controlled by said scroll-plate, and jaws E adjustable on said bars, and the pillar C being provided with a transverse guideway F and a swivelling carriage, and a tool-stock adapted to move thereon toward or away from the face-plate, as set forth. 5th. The face-plate f combined with the scroll-plate D, the radial bars h, in engagement with said plate and radially adjustable in guides on said face-plate, and the jaws E adjustable on said bars, whereby, with a small and uniform radial movement of said bars, the chuck may be adapted to receive and hold blanks of various sizes and other central or eccentric.

No. 28,623. Rotary Shuttle for Sewing Machines. (*Nattelle rotative pour machines à coudre.*)

The White Sewing Machine Company, (assignee of L. Arce Porter), Cleveland, Ohio, U.S., 3rd March, 1888; 5 years.

Claim—1st. In a sewing machine, the combination, with a driving-shaft and revolving shuttle having a recess or opening therein, of a reciprocating steady-pin located within the driver-shaft and adapted to enter the opening in the shuttle mechanism for reciprocating the steady-pin, substantially as set forth. 2nd. In a sewing machine, the combination, with a driving-shaft having a reciprocating steady-pin located therein, a revolving shuttle having a recess therein, of an arm attached to the steady-pin, the end of the arm being adapted to enter the recess of the shuttle, said arm having a bevelled or inclined surface adapted to advance the shuttle by engaging the latter, substantially as set forth.

No. 28,624. Hammock. (*Hamac*)

Mary A. J. Fuller, (assignee of Thomas Fuller), Trenton, Ont., 5th March, 1888; 5 years.

Claim—The combination of the various lengths of ornamental slats A, A, having the two holes d, d, at each end, with a single strand of metal rope B or B, passed or laced through these holes d, d, substantially as and for the purposes hereinbefore set forth.

No. 28,625. Soil Pulverizer. (*Brise-molle.*)

Robert B. Lillie, Montpelier, Vt., U.S., 5th March, 1888; 5 years.

Claim—1st. The combination, with the main axle and a rotary shaft secured in the arms of a sleeve loosely mounted on the axle, of a set of bent toothed disks removably secured on the rotary shaft adapted to saw the soil, substantially as set forth. 2nd. The combination, with the main axle and a rotary shaft secured in the arms of a sleeve loosely mounted on the axle, of a set of claw teeth attached to the said sleeve and loosely mounted on the rotary shaft, and a set of toothed disks secured on the rotary shaft alternately with the claw teeth, substantially as set forth. 3rd. The combination, with the main axle and a shaft secured in the arms of a sleeve loosely mounted on the axle, of the stationary teeth secured loosely on the rotary shaft, the rotary teeth secured rigidly on the rotary shaft, and the system of multiplying gear connecting the axle and the rotary shaft, substantially as set forth. 4th. The combination, with the armed sleeve loosely mounted on the axle, the rotary shaft journaled in the arms, the claw teeth secured to the sleeve and loosely mounted on the rotary shaft, of the multiplying gear, the axle and rotary shaft, and the rocking box adapted to closely house the gear, substantially as set forth. 5th. The combination with the sleeve loosely mounted on the axle and having arms, the swinging rotary shaft journaled in the arms and carrying the toothed disks, and the axle to which the swinging rotary shaft is secured, of the ground wheels loosely mounted on the axle, the ratchet wheels and spring actuated dogs for locking the ground wheels to the axle, and the angle lever for elevating and depressing the rotary shaft and toothed disks, substantially as set forth.

No. 28,626. Steam Generator.

(*Générateur de vapeur.*)

Thomas F. Morrin, Jersey, N.J., U.S., 5th March, 1888; 5 years.

Claim—1st. In a steam generator, the generator chamber constructed with substantially plane front and back plates, and with a partition c extending up to the water line, with communication above between the two parts of said chamber, and the compound generating tubes mounted in said chamber and extending across the combustion chamber over the fire bed, substantially as set forth. 2nd. In a steam generator, the combination, with the front and side plates of the combustion chamber, of the generator chamber B forming one wall of said chamber, and the compound generating tubes mounted at one end in said chamber B, and at the other end in the opposite plate of the combustion chamber, said tubes having suitable apertures within the generator chamber for the ingress and egress of water, substantially as set forth. 3rd. In a steam generator, the combination, with the generator chamber B, of substantially the form shown and provided with a partition c, of the generating tubes mounted

therein and comprising each an exterior tube I, with opening h and h arranged on opposite sides of the partition c, and the inner tube or conduit i arranged in tube I, substantially as set forth. 4th. In a steam generator, the arrangement, in the combustion chamber, of the headers M and M1, communicating with the generator chamber B, as shown, and connected by the numerous upright tubes N, the said headers and tubes being set close to the respective walls of the combustion chamber, as shown and described. 5th. In a steam generator, the generator chamber B divided below the water-line into two chambers B1 and B2 by a partition, and having a deflector or baffle k arranged over the chamber B2, in combination with the generating tubes mounted in said chamber, substantially as represented in the accompanying drawings. 6th. In a steam generator, the combination, with the generator chamber and the generating tubes mounted therein, of the compound drying tubes for the steam, mounted in said chamber above said generating tubes, each of said drying tubes comprising an exterior tube, as J, and an inner tube, as n, all arranged substantially as described and shown. 7th. In a steam generator, the generator chamber, as B, provided with a partition and with tubular stays, as r, extending across said chamber and opening into the fire-box at one end, and said stays provided with plugs or stoppers r1, substantially as set forth. 8th. In a steam generator, the combination, with the generating chamber having partitions r2 in it below the steam-dome K, which form chambers, of the several tiers of drying tubes mounted in said generator chamber, as shown, whereby the steam will be compelled to pass in succession through the several tiers of tubes, as set forth. 9th. In a steam generator, the header, as P, for the generating tubes, constructed in the form of a shallow partitioned box with an aperture in each cell for the reception of air, whereby communication between the tubes is prevented when the cap of the header is screwed on, as set forth.

No. 28,627. Rivet. (*Rivet.*)

The Standard Groove Rivet Company, Boston, (assignee of Léon O. Dion, Natick, Mass., U.S., 5th March, 1888; 5 years.

Claim—A solid and headed rivet having an annular groove formed in the body portion thereof, and the point end provided with a conical hole, as set forth.

No. 28,628. Corset. (*Corset.*)

Martha E. Lunn, Elgin, Ill., U.S., 5th March, 1888; 5 years.

Claim—The herein described improvement in corsets consisting in a breast piece vertically separated from the adjacent sections of the corset, from and above the lowest point where the expansion of the breast begins, and having an elliptical shape and two or more series of eyelets arranged in lateral lines, which eyelets are to be connected and disconnected with the hooks placed on the adjacent parts of the body of the corset and near the edges thereof, by which means the breast pieces are readily and conveniently adjustable to the comfort and wish of the wearer, combined with the wings D, D, extending from the adjacent portions outward over the breast pieces, substantially as described.

No. 28,629. Composition Metal.

(*Metal compost.*)

Halvor Berglin, Minneapolis, Minn., U.S., 6th March, 1888; 5 years.

Claim—The composition hereinbefore described consisting of copper, tin, zinc, nickel and antimony, in substantially the proportions hereinbefore specified.

No. 28,630. Drilling Machine.

(*Machine à percer.*)

Amos Whitney Hartford, Conn., U.S., 6th March, 1888; 5 years.

Claim—1st. The combination, in a drilling machine, of a laterally swinging head carrying two revolving and sliding spindles, a lever pivotedly mounted on said head, whereby the head may be swung laterally on its pivot, and connecting gearing, substantially as described, whereby the spindles are both operated from said lever, all substantially as set forth. 2nd. The combination, in a drilling machine, of a vice holding the piece to be drilled in a fixed position, a laterally movable head carrying two revolving and sliding spindles, a lever connected to actuate said spindles and serving at the same time to shift said head, and a lock or detent temporarily holding the head at one or the other end of its stroke, all substantially as set forth. 3rd. The combination, in a drilling machine head, of spindle C, D, sleeves E, F, gear G and a handle, as described, constructed to operate said gear substantially as set forth. 4th. The combination, with the head H and lock-plate L, of the sliding sleeve E carrying the spindle, bolt 28 sliding in said head and fitting into said plate, a spring acting on the bolt, and arm 45 adjustably fixed on said bolt and operated in one direction from said sleeve, all substantially as set forth. 5th. The combination, in a drilling machine of the class specified, and with a spindle-head swinging on a pivot, of two pulley provided spindles carried by said head above said pivot, driving pulleys below said pivot, and belts connecting each of said driving pulleys with the corresponding spindle pulleys, the whole being organized and arranged to tighten either belt on shafting, the spindle driven thereby from its idle to its working position, as shown and described. 6th. The combination, with the vice base and with slides 8 and 9 sliding thereon, of the right-and-left screw 7, the externally threaded sleeve 11 and the clamp 12 on said base, the sleeve being adjustable longitudinally by the turning of it in said clamp, and the screw being journaled in said sleeve, substantially as described.

No. 28,631. Grain Scourer. (*Nettoyeur des grains.*)

Thomas Williamson, Petrolia, Ont., 6th March, 1888; 5 years.

Claim—1st. In a grain scourer, the arms G1, G2, G3, shaped substantially as shown, as a means of attaching the carriers E at the required angles to the revolving disks C, said arms being provided with

slots e and bolts d, for securing them in the bevelled slots f of said disks, substantially as shown and specified and for the purpose set forth. 2nd. In a grain scorer, the above described scouring plates B, when constructed with bevelled edges a, said plates being scoured to the disks C, by arms F, usually provided with slots I and bolts c, substantially as shown and specified and for the purpose set forth. 3rd. In combination with the steel scouring plates J, the T-shaped arms H, I, circular on top with bevelled edges, for the purpose of attaching the said steel scouring plates in the bevelled grooves in the disks C, substantially as shown and specified. 4th. The disks C, when constructed for the combined purpose of receiving the sides of arms F and G, G₂, G₃, to which the scouring plates D and carriers E are attached, said disks being secured to the shaft B by set-screws h, substantially as shown and specified.

No. 28,632. Method of, and Apparatus for Generating Light and Heat from Mineral or other Oil. (*Méthode et appareil de production du gaz et de la chaleur avec de l'huile minérale ou autre.*)

Henry H. Doty, London, Eng., 6th March, 1888; 5 years.

Claim.—1st. An apparatus for the utilization of mineral and other oils, for heating or lighting purposes, whereby the oil passes through a coil of pipe in which it is converted into gas or vapour, and which is heated by the partial combustion of the said gas or vapour within the space or passage surrounded by the said coil, for the purpose above specified. 2nd. In apparatus for the combustion of mineral or other oils, a coil of pipe having the passage through the same open at both ends, the said pipe being connected to a tank or reservoir and having an orifice, nozzle or burner for directing the gas or vapour formed therein into the said passage, substantially as and for the purpose set forth. 3rd. The employment of a coil composed of two or more pipes and having the passage through the same open at both ends, and means for forcing oil into one or more of the said pipes, and water into the other pipe or pipes, the said pipes having orifices, nozzles or burners for directing the gas or vapour, and the steam formed therein into the said passage, substantially as and for the purposes above specified. 4th. The provision of means for supplying the saucer or receptacle beneath the coil or coils with oil from the feed-pipe, substantially as described.

No. 28,633. Means and Apparatus for Obtaining a Supply of Pure Water on Board of Steamships, etc. (*Moyens et appareil pour produire de l'eau pure à bord des vaisseaux à vapeur, etc.*)

John Kirkaldy, London, Eng., 6th March, 1888, 15 years.

Claim.—1st. A surface condenser having a vaporizing chamber in connection with it, into which a portion of the circulating water can be drawn or allowed to pass and be vaporized therein, substantially as described. 2nd. In steam engines, the employment of apparatus for the evaporation of a portion of the circulating or cooling water in, or passing from, the surface condenser, the vapour obtained being led to the main condenser or to a separate condenser to give a supply of pure fresh water, thereby utilizing heat imparted to the circulating or cooling water in its passage through the condenser. 3rd. A surface condenser or distilling apparatus in which the upper portion of the body of the circulating or cooling water is maintained comparatively at rest, whilst a continuous flow is maintained through the lower portion, so that the upper portion may be raised to a high temperature and vapour caused to be given off from it, such vapour being conveyed away to condensing coils or chambers to furnish a supply of fresh water. 4th. In a combined surface condenser and distilling apparatus, the employment of a long tube of comparatively small diameter open at its end, or two valves, one an inlet and the other an outlet, for maintaining the pressure in the vapour chamber approximately at atmospheric pressure.

No. 28,634. Nailing or Tacking Machine. (*Machine à chasser les clous et broquettes*)

The Plumbo and Atwood Manufacturing Company, Waterbury, Conn. (assigns of Elisha Wilder, Newton, Mass.), U. S., 6th March, 1888, 5 yrs.

Claim.—1st. In a nailing machine, the combination of driving mechanism, the wire feeding mechanism, the cutters a, a', formed to make an oblique side 2 on the wire, and the cutters a'', a''', formed to sever the wire at one end of said oblique side and shear off one side of the nail from its reduced end nearly to its head, the latter retaining the full diameter of the wire, as set forth. 2nd. In a nailing machine, the combination of driving mechanism, wire feeding mechanism, a fixed wire guide a⁴, the fixed cutters a and a', the reciprocating cutters a'' and a''', mechanism for reciprocating said cutters independently, whereby, first, the cutter a' is caused to co-operate with the cutter a'' in pointing the wire, and, secondly, the cutter a'' is caused to co-operate with the cutter a''' in severing the wire and shearing off a part of one side of the severed nail, a driver and a fixed throat under the same, to which each nail is presented by the forward movement of the cutter a', as set forth. 3rd. In a nailing or tacking machine, the combination, with nail forming and driving mechanism, substantially such as herein described, of a laterally movable feed-block, a roll between which and the block the nail wire passes, mechanism, substantially as described, for reciprocating said block, means, substantially as described, for pressing the block toward the roll during its downward movement, and means, substantially as described, for separating the block and roll during the upward movement of the block, as set forth. 4th. In a nailing or tacking machine, the combination, with nail forming and driving mechanism, substantially such as herein described, of a laterally movable feed-block, a roll between which and the block the nail wire passes, mechanism, substantially as described, for reciprocating said block, means, substantially as described, for pressing the block toward the

roll during its downward movement, and means, substantially as described, for giving the block an additional pressure at the end of its downward movement, and thereby rigidly holding the wire while the nail forming cutters are acting, as set forth. 5th. The combination of the vertically movable horn, mechanism, substantially as described, for controlling the height of the same according to the thickness of the material to be nailed, nail forming mechanism, a driver, a reciprocating wire feed and a stop which is moved vertically with the horn, and determines the initial or starting point of the feed and the length thereof, as set forth. 6th. In a nailing machine, the combination of the vertically movable horn, the screw-threaded standard supporting the same, a nut n₁ engaged with said threaded standard, and means, substantially as described, for rotating said nut and thereby raising or lowering the horn, as set forth. 7th. In a nailing machine, the combination of the vertically movable horn, the screw-threaded standard supporting the same, the stud t₁ having a thread of opposite pitch, the journalled nut tapped to engage both the standard and stud, and means, substantially as described, for rotating said nut, as set forth. 8th. In a nailing machine, the combination of the vertically movable horn, the screw-threaded standard, the nut engaged with said standard, a spring, as t₂, whereby the nut is normally turned to elevate the horn, and automatic means, substantially as described, for rotating said nut in the opposite direction, and thereby depressing the horn, as set forth. 9th. In a nailing machine, the combination of the vertically movable horn, the screw-threaded standard, the nut engaged with said standard, a spring, as t₂, whereby the nut is normally turned to elevate the horn, automatic means, substantially as described, whereby the nut is rotated in the direction required to depress the horn, and devices, substantially as described, controlled by the operator, whereby the nut may be independently rotated in the direction last mentioned, to additionally or independently depress the horn, as set forth. 10th. In a nailing machine, the combination of the vertically movable horn, the screw-threaded standard, the nut engaged with said standard, a spring whereby the nut is normally turned to elevate the horn, automatic means, substantially as described, for rotating the nut in the opposite direction, and automatic means, substantially as described, for releasing the nut and permitting the spring to rotate it, as set forth. 11th. The combination of the horn and the threaded standard, the spring impelled nut engaged with said standard, the lever l₁ connected with said nut by means, substantially as described, and provided with the flange l₂, the lever n₂, having the dogs adapted to grip said flange, means, substantially as described, for automatically moving said levers while they are locked together to depress the horn, and means, substantially as described, for automatically disengaging the lever n₂ from the lever l₁, as set forth. 12th. The combination of the lever l₁, having the flange l₂, the lever n₂ having the dogs n₁, n and arms n₃, n₄, and the adjustable piece n₅ formed to displace the arms n₁ and dogs n₁, as set forth. 13th. The combination of the screw-threaded horn supporting standard, the spring-impelled nut engaged, as described, with said standard, and adapted to normally raise the same, and means, substantially as described, for regulating the tension of the nut impelling spring, as set forth. 14th. The combination of the horn, the threaded standard supporting the horn, the nut for raising and lowering said standard, and the treadle d₁, and intermediate devices, substantially as described, whereby the operator is enabled to rotate the nut independently by foot power, as set forth.

No. 28,635. Machine for Cutting Bricks or Tiles. (*Machine à couper les briques ou les tuiles.*)

J. W. Panfield and Son, Willoughby, Ohio (assignees of Ellis M. Burr and John W. Stupes, Champaign, Ill.), U. S., 6th March, 1888; 5 years.

Claim.—1st. In a brick and tile cutting machine, the combination, with the continuously moving horizontal carrier, of the vertically reciprocating cutter geared to, and operated from said moving carrier, and fixed ways for controlling the horizontal movements of said cutter, substantially as and for the purpose described. 2nd. The combination, with an endless carrying belt and drums for supporting the same, of a drive-chain connecting said drums operatively together, a crank-shaft operatively geared to one of said drums, a vertically-reciprocating cutter-frame connected to said crank-shaft, and a guiding cam operatively connected to the cutter-frame, so as to deflect the movement of the cutter, to produce the desired cut without interrupting the movement of the carrier, substantially as set forth. 3rd. The combination, with the frame A, carrying the drums C, and standards B, of the sprocket-gearing between said drums, the crank-shaft upon said standards, the sprocket-gearing between said drums and shaft, the yoke frame connected to the crank-shaft and carrying the cutting-wire, and the guiding cams N, for deflecting the movements of the cutter, substantially as described.

No. 28,636. Weighing Machine. (*Pont à bascule.*)

The Nachmaschinen Fabrik Vormals Frister and Rossmann Actien Gesellschaft (assignee of George Reimann), Berlin, Germany, 6th March, 1888; 5 years.

Claim.—1st. In automatic weighing machines, the connecting rod a attached to the rod C, by means of the open link B, in combination with the levers E and L, the weight M, the toothed sector P and spindle Q, whereby when the connecting rod is depressed, the weight M will be operated and the toothed sector P will operate the spindle Q, and the dial R attached to the same, according to the weight of the person or object on the platform, substantially as described. 2nd. In automatic weighing machines, the flaps L, L', weighted levers e, e', and the glass covered opening b, with the lever e₁ located below the coin opening so that, when a coin is inserted in the coin opening, the lever e will be depressed, the flaps L, L' be drawn apart, and the dial partially disclosed, substantially as described. 3rd. In automatic weighing machines, the combination of the flaps L, L' the former of which is provided with a recess, with the lever Z, bell-crank lever p₁, rake-like arm S, weight M, levers a and e, so that, when the flaps are opened, the recess will glide over the lever e of

the bell crank lever *P*, and will be held open until the lever *e* is raised by means of the arm *S*, weight *M* and lever *a*, and the flaps closed, substantially as described. 4th. In automatic weighing machines, the coin guide *K* provided with slot *K*, so that coins of too small a size will be cut out of the machine into an external receptacle *a*, substantially as described. 5th. In automatic weighing machines, the combination of the lever *L*, piston *I* and cylinder *I*, with the lever mechanism, in order to regulate the movement of the connecting rod and increase the durability of the parts, substantially as described.

No. 28,637. Railway Track Drill.

(*Foret de chemin de fer.*)

Louis J. Creelius and Andrew Warren, St. Louis, Mo., U. S., 6th March, 1888; 5 years.

Claim.—1st. In combination, a suitable supporting frame, the drilling tool, the ratchet-wheel carrying said tool, a ratchet-spindle for rotating the same, and means operated by the rotation of the ratchet for automatically moving the drilling tool longitudinally, substantially as described. 2nd. In combination, the supporting frame *C*, a holder, as *E*, for the drilling tool, having rotary movement only in said frame, and means within the holder for automatically moving the drilling tool longitudinally, substantially as described. 3rd. In combination, the supporting frame, having a hollow portion *c*, tool-holder, as *E*, supported in said frame and having a hollow spindle, and means for giving the tool longitudinal movement, said means being located within the hollow spindle and the hollow portion of the frame, substantially as described. 4th. In combination, the drilling tool, a rotary holder *E* therefor, the follower in the rear of the tool, independent thereof, operated by the revolution of the holder to give the longitudinal movement to the tool, and a controlling nut in connection with the follower for regulating the movement of the said follower, substantially as described. 5th. The combination, in a track-drill, of the main bar and the drill frame *C*, said drill frame being journaled upon the said main bar to be rotated thereon, as described. 6th. In a track-drill, the main bar, the drilling mechanism and a frame, as *C*, for supporting said mechanism, said frame having a journal bearing at its end, adapted to the main bar and to have a sliding movement thereon, substantially as described. 7th. In combination, the main bar, the drilling mechanism, the frame for supporting the same, the said frame having a tubular journal-bearing at its ends adapted to the bar, and a set-screw, substantially as described. 8th. In combination, the brace-frame composed of the bar *A* and the end-bars *a*, *a'*, a drilling mechanism, a drill frame for supporting said mechanism carried by the main bar and arranged, when in its normal position, to lie in the same plane with the brace-frame, substantially as described. 9th. In combination, the main bar *A*, the drilling mechanism, the frame *C* for supporting said mechanism, the ratchet-lever *F*, the end bar *a* and a keeper *K* on said arm, adapted to hold the lever *F*, substantially as described. 10th. The combination, in a track or other drill, of the perforated ratchet-spindle, the perforated frame part *c*, the drill *D* and the screw *G*, substantially as described. 11th. The combination of the brace, the drill-frame, the screw, the wheel *H*, the nut *I* and the plate *J*, substantially as described. 12th. The combination of the drill, the screw, the ratchet and spindle, the frame *C*, the brace, the wheel *H*, the nut *I*, the plate *J* and the ratchet lever, substantially as described. 13th. The combination of the ratchet-spindle, having the squared perforation, and the screw having its threaded portion squared, as described. 14th. The combination of the screw, having the shoulder, the wheel *H* and the drill-frame part *c*, as described. 15th. The combination of the screw, the wheel *H*, the drill-frame part *c* and the main bar *a*, as described. 16th. The combination of the drill frame *C*, the ratchet-spindle and the screw, as described, and for the purpose of supporting said ratchet spindle at both ends. 17th. The drill frame *C*, perforated at *c*, and *c'*, in combination with the screw and the drill brace *A*, substantially as described. 18th. In combination, the brace-frame, the drilling mechanism and a leg *M*, for supporting the brace-frame and said drilling mechanism, substantially as described. 19th. In combination, a drilling tool held in a rotating ratchet, a screw or follower arranged in rear of said tool and operated by the ratchet to advance said tool longitudinally, a nut on said screw for controlling the movement thereof, and automatic means for causing intermittent movement of the screw longitudinally, substantially as described. 20th. In combination, a drilling tool carried and operated by a ratchet, an independent screw in the rear of the tool, and adapted in connection with a controlling nut to be operated automatically by the movement of the ratchet, to advance the drilling tool longitudinally, substantially as described. 21st. In combination, the drilling tool carried and rotated by the ratchet, the feed-screw in the rear thereof, having longitudinal movement, a controlling nut on said screw having rotary movement, and means for holding said nut stationary, whereby the rotary movement of the ratchet will operate to advance the screw, substantially as described. 22nd. The combination of the drill-brace, the leg *L* and the chair *M*, said leg being made to slip and to turn upon the main bar, and said chair being attached to the brace by means of the chain, as described. 23rd. The combination of the drill *D*, the perforated ratchet-spindle and the screw *G*, said screw acting to push the drill longitudinally through the spindle, as described.

No. 28,638. Nail. (*Clou.*)

The Plume and Atwood Manufacturing Company, Waterbury, Conn. (assignees of Elisha Wilder, Newton, Mass.), U. S., 6th March, 1888; 5 years.

Claim.—1st. A wire nail made from cylindrical wire having one side cut away at one end to form a diagonal surface 2, and the opposite side cut away to form a flat surface 5 of considerably greater length than the surface 2, the said surface 5 forming a chisel point by its intersection with the surface 2, and by its elongation preventing the driven nail from turning, as set forth. 2nd. A wire nail cut away at one side to form an oblique surface 2, and cut away at its opposite side to form a flat surface 5 extending from the end intersected by

the surface 2 nearly to the opposite end, and there terminating in a shoulder 4, the last mentioned end having the full diameter of the wire, as set forth.

No. 28,639. Reamer for Boring Gas, Oil or Water Wells. (*Foret pour creuser les puits de gaz, d'huile ou d'eau.*)

John M. Ross, Bower Hill, Penn., U. S., 6th March, 1888; 5 years.

Claim.—1st. The combination, with the stock and screw-bolt, of a washer and bits having the corresponding lips *e*, *f*, to form a hinge, as and for the purpose set forth. 2nd. The combination of the bit-stock having the aperture *b* and the springs *C*, the bits *E* with shoulders *c* and lips *e*, the screw-bolt *G*, and the washer *F* having the lip *f*, all substantially as shown and described.

No. 28,640. Ventilator in Connection with Hot Water Heating Apparatus. (*Ventilateur de calorifère à eau.*)

Charles C. Longard, Halifax, N.S., 6th March, 1888; 5 years.

Claim.—1st. In a device for ventilating buildings, rooms and apartments, in connection with hot water radiators, the construction and arrangement of the diaphragm *K* with or without a non-conducting lining, the air pipes or conduits *E*, and the diaphragm *K* between the current of fresh air and the base, pipes, top and other parts respectively of the radiator, substantially as and for the purposes described. 2nd. In a device for ventilating buildings, rooms and apartments, in connection with hot water radiators, the combination of the diaphragms *K* (with or without a non-conducting lining) and *K*, and the air pipes *E*, substantially as and for the purposes described. 3rd. In a device for ventilating buildings, rooms and apartments, in connection with hot water radiators, the combination of the diaphragms *K* (with or without a non-conducting lining) and *K*, the air pipes *E* and the chambers or air spaces *C* and *H*, substantially as and for the purposes described. 4th. In a device for ventilating buildings, rooms and apartments, in connection with hot water radiators, the combination of the diaphragms *K* (with or without a non-conducting lining) and *K*, the air pipes *E* and the air chamber *C*, substantially as and for the purposes described. 5th. In a device for ventilating buildings in connection with hot water heating apparatus, the construction and arrangement of the diaphragm *K* between the current of fresh air and the different parts of such heating apparatus, substantially as and for the purposes described. 6th. In a device for ventilating buildings, in connection with hot water heating apparatus, the intervention of a shield or diaphragm between the current of fresh cold air and the heating apparatus, to protect the water in the apparatus from freezing in consequence of a draught or current of cold air striking thereon, substantially as described.

No. 28,641. Horse Shoe Nail Machinery.

(*Machine à clou à cheval.*)

Sigvart Hansen, Boehn, Norway, 7th March, 1888; 5 years.

Claim.—1st. A horseshoe nail machine, having an automatic feed motion, which consists essentially of two carriages, one of which carries the rod (from which the nail is to be forged) and is fed between the anvil and the cutter, and the other pushes said rod forward the length of a nail, as each nail is finished, substantially as shown and set forth. 2nd. In a horseshoe nail machine, as described, the application of two hammers for hammering the edges of the nail, and of a vertical moving mouth piece, substantially as shown and set forth. 3rd. In a horseshoe nail machine as described, the application of a heating apparatus between the feed motion and the anvil of the machine, substantially as shown and set forth. 4th. In a horseshoe nail machine, as described, the application of a cutter immediately in front of the anvil, substantially as described and shown. 5th. The machine for making horseshoe nails, substantially as described and shown.

No. 28,642. Fire-Extinguisher.

(*Extincteur d'incendie.*)

Joseph Clapp, Evanston, Ill., U. S., 7th March, 1888; 5 years.

Claim.—1st. A fire-extinguisher or sprinkler of the class described, in which the valve is held to its seat by means of a post, one end of which bears against the same, while the other is loosely connected with links for resisting the water pressure upon said valve, and arranged in a plane oblique to the plane of the axis of said post, a link loosely attached to the top of said post and placed horizontally, or nearly so, for normally preventing an oscillatory movement of said supporting post, the outer end of said link being loosely attached to the end of a thin metal plate, which is in turn attached by fusible solder to a like plate rigidly secured to the frame, and a stationary stud attached to said frame, which serves as a bearing for said thin metal plate, at or near its junction with said horizontal link, substantially as and for the purpose set forth. 2nd. In a fire-extinguisher of the class described, the combination, with a valve, of the post *G* loosely connected with links *F*, *F*, secured in turn to the frame, said posts and links respectively being in planes oblique to each other, and link *H* loosely connected with a metal plate arranged to bear across a stationary pin or stud, and attached by fusible solder to a secondary plate rigidly secured to the frame, substantially as shown and described.

No. 28,643. Convertible Freight Car.

(*Car à marchandises convertible.*)

William F. Messop, Philadelphia, Penn., U. S., 7th March, 1888; 5 years.

Claim.—1st. In a convertible grain and general freight car having a central hopper, a floor consisting of fixed or stationary end sections *I*, *I*, and adjustable sections *K*, *K*, substantially as shown and described. 2nd. In a convertible grain and general freight car, a hop-

por having laterally extending flange plates *f, f*, with racks *s, s*, in combination with adjustable floor sections *K, K*, having pawls *k, k*, substantially as shown and described. 3rd. In a convertible grain and general freight car, the combination, with adjustable sliding floor sections *K, K*, of windlasses for moving the same, inclined guides *L*, with slots *I* and trunnions *k, k*, and trunnions extending into spaces in the car walls, and the windlass chain being concealed or contained in said spaces, substantially as shown and described. 4th. In a car having adjustable inclined floor sections *K, K*, the combination with said sections, of inclined cleats *L* and cushions *l* forming tight joints to prevent leakage of grain, substantially as shown and described. 5th. In combination with the discharge spout *F* having tongues *s*, the sliding end plate *T* having flanges *t, t*, which engage with said tongues, and a latch for locking said plate on said spout, substantially as shown and described. 6th. The combination, with the spout *F*, of flap or hinged gate *V* and pin *V'*, said gate being wholly inside the spout, and said pin having one end extending through the wall of the spout, substantially as shown and described.

No. 28,644. Sugar Sap Evaporator.
(*Evaporateur d'eau saccharine.*)

Clark Hall and William H. Wright, East Farnham, Que., 7th March, 1888; 5 years.

Claim.—The combination of the heater *N*, the recesses or flues *E, E*, the arrangement of the partitions and guides *C, C* and *F, F*, the syring down compartment *I, I*, the arrangement of the openings closed by slides or gates *O, O, M, M, H* and *H'*, with an evaporator, substantially as and for the purpose hereinafore set forth.

No. 28,645. Coffee Mill. (*Moulin à café.*)

Cyrus Tobias, Freeport, Ill., U.S., 9th March, 1888; 5 years.

Claim.—1st. The combination, in a coffee-mill, of the grinding-surfaces *O, K* and rotary force-feed deflectors *c, c, c*, arranged and operating substantially as described. 2nd. The combination, in a coffee-mill, of the grinding-surfaces *O, K* and the rotary shield *C*, provided with the deflectors *c, c, c*, substantially as described.

No. 28,646. Compound Steam Engine.
(*Machine à vapeur composée.*)

John Ericsson, New York, N.Y., U.S., 9th March, 1888; 5 years.

Claim.—1st. The combination, with the high-pressure cylinder of a compound steam engine, a steam-actuated piston fitted thereto, and a valve for the induction of the high pressure steam to the said cylinder at one end only, of a valve at the other end of the said cylinder closing inward, but opening outward by the pressure from within, substantially as herein described, whereby the said piston is made to work as an air pump piston to expel air and steam from said cylinder, on the side of the piston opposite to that on which the high-pressure steam acts, and thereby cause a vacuum on one side of the said piston while the high-pressure steam acts on the opposite side, as herein set forth. 2nd. The combination, with the small and large cylinders of a compound engine, arranged end to end and having communication only between one end of the small one and the reverse end of the large one, and two pistons, one for each cylinder, of an outwardly-opening valve at the other end of the small cylinder, whereby the piston of the small cylinder is made to expel any air, water or steam that may have collected therein, substantially as herein described. 3rd. The combination, in a compound steam engine, of a high-pressure steam cylinder receiving high-pressure steam at one end, and having at the other end a valve opening automatically by pressure within the said cylinder, a low-pressure cylinder, one end of which is always in communication with the condenser, and the other end of which has valve communications with the high-pressure cylinder and the condenser, substantially as herein described, whereby the high pressure piston during its entire stroke produced by the direct action of the steam upon it works against a vacuum, and at the same time the low-pressure piston is in equilibrium, as herein set forth. 4th. The combination, in a compound engine, with a small single-acting steam cylinder and a large double-acting steam cylinder, arranged horizontally end to end and receiving steam only at their adjacent ends, and a condenser below them, of the duct forming communication from the bottom of the small cylinder through the end of the large one, the ducts *a, a*, forming communication between the condenser and both ends of the large cylinder, and the valves *c, c* in the ducts *a, a*, all substantially as herein described.

No. 28,647. Finger and Cutter Bar for Harvesters or Mowers. (*Porte-pointe et porte-lame de faucheuse-moissonneuse.*)

EB F Réaume, Amherstburg, Ont., 9th March, 1888, 5 years.

Claim.—The herein described method of attaching cutters or fingers to cutter or finger bars, consisting in providing the cutter or finger bar with recesses into which the heels of the cutter or fingers are fitted, and providing the cutter or finger bar and the heels of the cutter or fingers with coinciding mortises adapted to receive a locking tenon detachably inserted therein, substantially as described.

No. 28,648. Apparatus for Capsuling Bottles, etc. (*Appareil à poser les capsules des bouteilles, etc.*)

Emil Tateur, London, Eng., 9th March, 1888; 5 years.

Claim.—In capsuling machines or appliances, the caoutchouc ring formed with or without radiating notches or grooves contained and held by projecting flange, or otherwise, in a hollow cylinder closed at one end, the bottles being capsuled by being pressed with the capsule through central aperture in caoutchouc ring, substantially as set forth.

No. 28,649. Freezing and Refrigerating Machine. (*Appareil congélateur et réfrigérant.*)

Henry A. Floss, Newton, Isle of Wight, 10th March, 1888; 15 years.

Claim.—1st. The combination, in a freezing and refrigerating machine, of a vessel or compartment *A* containing liquid which is cooled or frozen by evaporation, a vessel or compartment *B* containing sulphuric acid or other vapour absorbent, and an air pump *C* and parts *F, G* and *G'* connecting the same, substantially as described. 2nd. In a freezing and refrigerating machine, the means for closing the air or vessel containing sulphuric or other corrosive absorbent, comprising the lid *K* with its groove containing the elastic ring *Z*, and the thin metallic tongue *z* on the lid drawn into liquid tight contact with the jar or vessel within the circumference of the elastic ring, substantially as described. 3rd. The combination, in a freezing and refrigerating machine, of the suction valve *L*, the rod *M* linked therewith, the spring clip *M'*, moving with the piston *n* and raising the valve *L*, and releasing it before the piston reaches the end of its stroke, and mechanism delivering oil or liquid into the cylinder, substantially as described. 4th. The combination, in a freezing or refrigerating machine, of a suction valve *L*, tubular rod *N*, linked attachment *M'*, hollow piston rod *N* and spring clip *N'*, substantially as described. 5th. The combination, in a freezing or refrigerating machine, of an air pump cylinder *C* and oil or liquid receiving cavities *T, T*, in the side thereof, passed over by the piston *n*, the whole forming an apparatus for admitting measured quantities of liquid into the cylinder, to ensure the complete expulsion of air therefrom on the return of the piston, substantially as described. 6th. The combination, in a freezing or refrigerating machine, of the piston rod *M*, the exit apertures at the top of the cylinder *C*, the cupped or flanged valve *Q* and the stop *R*, the whole forming a device by which the exit valve of the air pump is automatically opened and closed, whilst also a tight joint is maintained around the piston rod, substantially as described. 7th. The combination, in a freezing or refrigerating machine, of the air pump cylinder *C*, the gutter-like receptacle *c* around the suction valve *L*, the piston *n*, of a form to enter the gutter *c*, the piston valve *P* and mechanism delivering oil or liquid into the cylinder, the whole forming an apparatus whereby air is completely excluded from beneath the piston when at the lower end of its stroke, substantially as described.

No. 28,650. Woollen Boot. (*Botte de laine.*)

Wallace H. Dodge and Robert D. O. Smith, Mishawaka, Ind., U.S., 6th March, 1888; 5 years.

Claim.—1st. The herein described improvement in the mode of making woollen boots, which consists in forming the boot blanks of an exaggerated size and with the strands interwoven direct and diagonal, by braiding independent single twisted strands of yarn together, and subsequently shrinking or fulling and felting said blanks to the desired size, and finishing on the tree and last as usual with woollen boots, as described. 2nd. The herein described improvement in the mode of making woollen boots, which consists in braiding in dependent loosely twisted strands of yarn to form a series of continuous boot blanks of an exaggerated size over a succession of formers, separating such blanks, fulling or shrinking them to the required size and finishing them on tree and last, as described.

No. 28,651. Knit Woollen Boot.
(*Botte en tricot de laine.*)

Wallace H. Dodge and Robert D. O. Smith, Mishawaka, Ind., U.S., 9th March, 1888; 5 years.

Claim.—1st. The herein described mode of making wool boots, which consists, first, in producing a boot blank greatly exaggerated in size, containing a large amount of stock in a relatively loose condition, by knitting two or more ordinary loosely twisted yarns separately through wett thread needles, substantially as described, second, in compacting the stock so prepared into a stiff felt by fulling and shrinking said boot, and third, in finishing the same on tree and last. 2nd. A woollen boot formed wholly by knitting a portion of the yarn being separately knit with wett thread needles upon one surface or face, whereby the outer surface may be made of finer stock than the body, substantially as set forth.

No. 28,652. Oil Burner. (*Foyer à huile.*)

James A. Cowles, Chicago, Ill., U.S., 9th March, 1888; 5 years.

Claim.—1st. The combination of the retort central descending pipe leading from the retort, horizontal pipe at lower end of descending pipe, provided with apertures in each end thereof, one facing to the right and the other facing to the left, and air chambers at each end of horizontal pipe, each provided with a hole in the upper part thereof pointing towards the retort, and air hole near the end where they are attached to horizontal pipe, and the bracket supported by the central descending pipe provided with tubular holes, all constructed and arranged substantially as shown. 2nd. The combination of the retort, central descending pipe leading from the retort, horizontal pipe at lower end of descending pipe, provided with apertures in each end thereof, one facing to the right and the other facing to the left, and air chambers at each end of horizontal pipe, each provided with a hole in upper part thereof pointing toward the retort, and air holes near the ends where they are attached to horizontal pipe, the bracket supported by the central descending pipe provided with tubular holes, and a tank provided with a force pump and pipe, and regulating valve connecting the same with the retort, all constructed and arranged substantially as described.

No. 28,653. Automatic Catch for Inclined Railways. (*Enrayeur automatique pour chemin de fer inclinés.*)

Joseph Schuller, Allegheny, Penn., U.S., 9th March, 1888; 5 years.

Claim.—1st. In an automatic stop or safety-catch for inclined rail-

ways, the combination of a car, a hoisting or safety rope attached thereto, and dogs having a yielding and pivotal connection with said car and held up by said rope, substantially as and for the purpose set forth. 2nd. In an automatic catch for inclined railways, the combination of a car, a hoisting or safety rope for the same, the dogs *j* pivoted to said car and having springs *i*, between their ends and the body of the car, substantially as and for the purpose set forth. 3rd. In an automatic stop or catch for inclined railways, the combination of the car, a dog or dogs pivoted thereto, a hoisting rope attached to said car and holding said dogs in a raised position, with a spring interposed between said car and the dogs, and means for regulating the force of said spring, substantially as described. 4th. In an automatic stop or catch for inclined railways, the combination of the car, the dogs *j*, the rods *g* to which said dogs are pivoted, the springs *i* interposed between said rods and the frame of the car, and the hoisting-rope secured to the car frame and passing through an eye formed in, or attached to, the dogs, substantially as and for the purpose set forth. 5th. In an automatic stop or catch for inclined railways, the combination of the car, the dogs *j* having a yielding pivotal connection with said car, cross-stays bracing and holding said dogs together, and *c* covers or eyes attached to said stay or stays through which the hoisting-rope passes, substantially as described. 6th. In an automatic stop or catch for inclined railways, the combination of the car and the hoisting-rope attached thereto, with dog or dogs pivoted to the car frame and carrying eyes or sleeves through which the hoisting-rope passes, so that the dogs will be held up by said rope, substantially as and for the purpose set forth.

No. 28,654. Improvements in Lids or Covers and in fitting them to Metallic or other Receptacles. (*Perfectionnements aux couvercles et dans la manière de les poser sur les boîtes métalliques ou autres.*)

William T. Seymour, Stockton-on-Tees, Eng., 9th March, 1888, 5 years.

Claim.—1st. The employment of one or more levers attached, whether permanently or temporarily to the cover or lid of the box, can or the like receptacle, whereby the said box, can or other receptacle can be opened, substantially as described. 2nd. In the construction of metallic boxes, cans, or the like articles, the employment of a means of leverage attached, whether temporarily or permanently, to the lid or cover of the box or can, combined with the mode of fitting the lid or cover into the box or can, so that the rim thereof can be employed both as a guard to protect the lid or cover from external pressure and as a fulcrum, whereby the lever can be used to force up the lid, substantially as described with reference to the accompanying drawings. 3rd. The particular mode of constructing the lid or cover so as to fit into the box or can like a plug, by turning up the outside edge to form a rim *c*, which fits within the rim *d* of the box or can, whether tapered or not, substantially as described and illustrated in the accompanying drawings. 4th. The particular mode of providing the seat or ledge *d* for the lid or cover *a*, by uniting the rim *d* with the shell of the box or can *b*, as described and clearly illustrated in Figs. 3 and 4.

No. 28,655. Art of Etching Metals.

(*Art de graver les métaux à l'eau forte*)

Ernst Nienstaedt, New York, N.Y., U.S., 9th March, 1888, 5 years

Claim.—1st. The process hereinbefore described of producing designs in indelible metallic deposits upon a metallic surface, by stamping such surface with a finely powdered hygroscopic salt and subjecting the same to atmospheric moisture until such deposit is formed, substantially as and for the purpose set forth. 2nd. The process of etching designs upon bright metallic surfaces consisting in enstamping such designs upon such surface with a paste formed of corrosive acid and a powder of a material neutral to, and insoluble in, such acid, and allowing the design so enstamped to remain until such acid has sufficiently etched said metallic surface, substantially as and for the purpose set forth. 3rd. The further improvement in the process hereinbefore described, which consists in spreading the etching material upon a plane surface, removing part of said material with an elastic stamp comprising a design, and enstamping such design upon the surface to be etched, substantially as and for the purpose set forth.

No. 28,656. Art of Etching Glass, Porcelain, etc. (*Art de graver à l'eau forte, le verre, la porcelaine, etc.*)

Ernst Nienstaedt, New York, N.Y., U.S., 9th March, 1888, 5 years.

Claim.—The hereinbefore described process of etching glass by preparing an ink composed of resin dissolved in fatty oil and a deliquescent salt of fluorine acid containing a portion of such acid free, by stamping a design upon the glass to be etched with such ink, then subjecting the article to the action of warm moist air from two to five minutes, until the said design shall have been etched into the surface of such glass, all substantially as and for the purpose set forth.

No. 28,657. Mop Wringer. (*Essoreuse de torchon.*)

William Sellers, Haverhill, Mass., U.S., 9th March, 1888, 5 years.

Claim.—The combination of the handle *A*, the socket *G*, rectangular frame *D*, wringers *F*, *F*, the plate *E* provided with teeth or serrations on each edge, the mop *B* passing between the wringers *F*, *F* and provided with handles *C*, *C*, one at each end, and the hooks *a*, *a*, all as shown and described.

No. 28,658. Sliding Door for Freight Cars, etc. (*Porte roulante pour chars à marchandises, etc.*)

Charles H. Dunham, Boston, Mass., U.S., 9th March, 1888, 5 years.

Claim.—1st. The car having at one edge of its doorway an outwardly

projecting strip *b*, combined with the sliding door having at its rear edge an inwardly projecting strip overlapping the strip *b*, as set forth. 2d. The car having at one edge of its doorway an outwardly projecting strip *b*, combined with the sliding door having at its rear edge an inwardly projecting strip *d*, overlapping the strip *b* and separated therefrom by an air space, as set forth. 3rd. The combination of the car having the strip *b* at the rear edge of its doorway, the door having at its rear edge the vertical inwardly projecting strip *d*, and at its lower portion the wedge *f*, and the fixed guide *g*, adapted to co-operate with the wedge *f* and press the rear edge of the door and its strip *d* inwardly against the side of the car, whereby the strip *d* is caused to overlap the fixed strip *b*, when the door is closed. 4th. The door having the wedges *f*, *f*, projecting outwardly from its lower portion respectively at its front and rear edges, combined with the lower bracket or guide *g*, formed to co-operate with said wedges in holding either the front or the rear edge of the door, and the guides *h*, *h*, arranged respectively to hold the front and rear edges of the door, as set forth. 5th. The hanger having the rider bar and cast in one piece, which includes the attaching plate and slotted rider bar, as set forth. 6th. The hanger having the divided or slotted rider bar, the lower edge of which has a gentle longitudinal curvature highest at the central part of the rider bar, as and for the purpose specified. 7th. The hanger having the divided or slotted rider bar, the lower edge of which has the described concave curvature, and the stops *8*, *8*, curved as described on their acting sides, as set forth. 8th. The track rail having the central vertical rib or flange, and the horizontal tread surfaces at opposite sides of said flange, all formed from a single piece of sheet metal, as set forth. 9th. The track rail having the central vertical rib or flange and the tread surface at opposite sides of said flange, combined with the wheel grooved to receive said rib and having two treads to run on said tread surfaces. 10th. The combination of the door, the track beam, the track thereon having the vertical rib, the grooved wheels and the hangers having the slotted rider bars resting on the axles of said wheels, all arranged and operating substantially as set forth. 11th. The bushing having a curved socket and adapted to be attached to a sliding door, and the curved bolt *t* adapted to slide in said socket, and provided at its outer end with a hasp or eye, and at its inner end with a pin *u* adapted to abut against the bushing to prevent the withdrawal of the bolt, the bushing having a recess *u*, to receive the pin *u*, as set forth.

No. 28,659. Eaves Trough. (*Larmier de toit.*)

George W. Taylor, Castillo, N.Y., U.S., 10th March, 1888, 5 years.

Claim.—1st. The combination, with the hangers and the cross-bar or plate of the trough composed of sections, the apertured sleeves or collars, and the nutted bolts, substantially as shown and described. 2nd. The combination of the troughs composed of sections, the apertured sleeves or collars uniting said sections by nutted bolts, and the cross-bar or plate having clutching arms and suspended by hangers, substantially as shown and described.

No. 28,660. Apparatus for Drawing off Grain from Silos, etc. (*Appareil pour tirer le grain des silos, etc.*)

George Henderson, Liverpool, Eng., 10th March, 1888, 5 years.

Claim.—1st. Causing the grain to run continuously from the top layer through the centre or down the sides, or other part of the body of grain in the silo, instead of from the bottom, by providing the inside of the silo respectively centrally on its sides, or other parts, with a pipe or pipes, or a flow column or columns *a*, formed on its entire length with a suitable number of openings *c*, with or without valves *d*, substantially as and for the purpose specified. 2nd. Providing the openings *c* with valves *d*, opened and closed automatically by the weight of the grain in the silo *b*, substantially as and for the purpose specified.

No. 28,661. Link-Bending Machine.

(*Machine à plier les chaînons.*)

Stephen Collins, Saint John, N.B., 10th March, 1888, 5 years.

Claim.—1st. The combination of the frame *7*, the shaft *14* journalled thereon, and provided with an eccentric *23* and crank *31*, the blade *21* fixed on the frame *7*, the shaft *23* mounted to slide in bearings on the frame and connected with the eccentric *23*, the shears *22* on the shaft *23*, the support *33* fixed to the frame, the former *38* depending from the support, the head *29* fitted to slide on the frame and connected with the crank *31*, the fork *28* secured to the said head, and the rollers *35* journalled on the arms of the fork, substantially as shown and described. 2nd. The combination of the shears *21*, *22*, the former *38*, the sliding head *29*, the bending fork *28* fitted to slide in the said head, and a spring *37* between the head and bending fork, and mechanism operating the shears and sliding head in unison, substantially as shown and described. 3rd. The combination of the former *38*, the head *29*, the bending-fork *28* fitted to slide in the head, and a spring *37* between the said head and fork, substantially as shown and described. 4th. The combination of the stationary former *38*, and the fork *28* mounted stangtly to the former in slide-ways, which are parallel with the former, substantially as shown and described. 5th. The combination of the frame *7*, provided with the opening *34*, the support *33* fixed upon the said frame, the former *38* depending from the said support, with its delivery end downward over the said opening, and means for bending links around the said former, substantially as shown and described. 6th. The combination of the frame *7*, provided with the opening *34*, the support *33* fixed upon the said frame, the former *38* depending from the said support, with its delivery end downward over the said opening, the pins *43* fitted through the support at the ends of the former, the springs *49* adapted to raise the pins, the lever *46* pivoted to the frame over the said pins, and means for operating the same, substantially as shown and described. 7th. The combination of the fixed former *38*, and means, substantially as described, for bending a link around one end of it and along its sides, the end benders *39* fitted to slide transversely past the opposite end of the said former, the tappets *41* engaging the benders *39* and the levers *42*,

and springs 45 acting upon said benders, substantially as shown and described. 8th. The combination of the fixed former 33, the forked bender 23 fitted to pass along both sides of the said former, and the two grooved rollers 35 journaled in the arms of the forked bender, the grooves of these two rollers being in a plane slanting to the former 33, substantially as shown and described. 9th. The combination of the fixed former 33, the forked bender 23 fitted to pass along both sides of the said former, the grooved rollers 35 journaled in the arms of the forked bender, the groove of one roller being above the horizontal plane of the groove of the other roller, and the benders 39 fitted to slide transversely past the end of the fixed former, and provided with projecting ends 51 and 52, adapted to pass one above the other, substantially as shown and described. 10th. The combination of the frame 7, the shaft 14 journaled in bearings thereon, the eccentric 25, the crank 31 on the said shafts 16, 17 and 18, journaled in bearings on the said frame, the tappets 41 on the shafts 16 and 18, the tappet 50 on the shaft 16, the blade 21 fixed to the frame, the shear-blade 22 connected with the eccentric 25, the support 33 and the former 33 depending from it, the head 29 fitted to slide upon the frame and connected with the crank 31, the fork 28 stantingly mounted in the head 29, and provided with roller 35, the end benders 39 fitted to slide on the frame transversely past the end of the said former and engaging the tappets 41, the levers 42 pivoted to the frame and loosely connected with the benders 39, the springs 45 connecting the levers 42 with fixtures of the frame, the pins 48 through the support 33, the springs 47 around the pins, and the lever 46 pivoted to a fixture of the frame and engaging the tappet 50, substantially as shown and described.

No. 28,662. Railroad Spike.

(*Chevillette de chemin de fer.*)

Thomas A. Davies, New York, N.Y., U.S., 10th March, 1888, 5 years.

Claim.—A railroad spike, made substantially as herein shown and described, with the lower part of its head formed with flat surfaces *a, a'*, at an angle to each other, as and for the purpose set forth.

No. 28,663. Car Axle Box. (*Boite à graisse.*)

Henry L. Moyer and George W. Youlls, Shickshinney, Penn., U.S., 10th March, 1888, 5 years.

Claim.—1st. The combination of the axle, the axle-block secured thereupon, the anti-friction rollers carried in recesses in said block, the pedestal having a circular bearing cavity for said rollers the discs secured to the axle against the ends of the pedestal and having circular recesses for the ends of the rollers, and the screw-bolt for removably securing the outer disc to the axle, substantially as set forth. 2nd. The combination of the axle, the axle block secured thereupon, the anti-friction rollers carried in recesses in said block, the pedestal having a circular bearing cavity for said rollers, the discs secured to the axle against the ends of the pedestal, and having circular recesses for the ends of the rollers, the screw-bolt for removably securing the outer disc to the axle, and provided with the ratchet at its head, the spring pawl engaging with said ratchet, and the square-headed stud-bolt for disengaging the said pawl when desired, substantially as set forth.

No. 28,664. Spring Bustle. (*Fournure elastique.*)

Annie M. Hill, Belleville, Ont., 10th March, 1888; 5 years.

Claim.—The combination, in a bustle, of a series of tapering coil springs, their small ends fitted together in a belt or girdle, and the larger ends so disposed and attached together as to assume the circular form of a bustle, as shown and described for the purposes set forth.

No. 28,665. Process of Cutting Scale Boards for Cheese and Apparatus therefor. (*Manière de débiter les échisses à fromage et appareil pour cet objet.*)

Philip McGinnis, Atholstan, Que., 10th March, 1888; 5 years.

Claim.—1st. The art or process of forming scale boards from veneer by forcing such veneers through cutting and shaping dies, substantially as herein set forth. 2nd. In a scale board cutting machine, the combination of a rotating shaft, discs mounted thereon, pitmen connected by crank pins to such discs, and reciprocating rods or plungers connected to pitmen and carrying presser plates, dies with knives forming their upper edges, secured to table and movable bed and counterpoise, all substantially as and for the purposes described.

No. 28,666. Stove-Pipe Thimble.

(*Dè de tuyau de poêle.*)

William H. Paokham, Dresden, Ont., 10th March, 1888, 5 years.

Claim.—1st. A stove-pipe thimble consisting of the perforated heads A, B, outer wall C, partition D and an inner wall constructed of two sections E and F, screwing tubular-wise together, whereby sections are independently removable, and, when coupled, hold their parts of the thimble together, as set forth. 2nd. A stove-pipe thimble having the inner wall in two sections, screwing telescopically together, air spaces between the walls and partition, and perforated heads closing the ends of the air spaces, as set forth. 3rd. The cover G, provided with an annular row or rows of holes H, in combination with a thimble having perforated heads A, B, walls C and E, F, and partition D, as set forth.

No. 28,667. Anchor for Posts.

(*Ancre de poteau.*)

William P. Logan, and William H. Quick, Trenton, N. J., U. S., 10th March, 1888; 5 years.

Claim.—An anchor for posts formed of a circular plate, to the centre of which the post is to be fixed, having a series of rigid radial

wings projecting from one face, and, in addition thereto, a like series of rigid radial wings projecting from its opposite face and arranged respectively midway of the first mentioned wings, as and for the purpose set forth.

No. 28,668. Plough. (*Charrue.*)

Lorenzo D. Ball, John T. Bender, Canton, Frank Bowles and T. O. Grover, Toronto, Ohio, U.S., 10th March, 1888, 5 years.

Claim.—1st. The combination of the beam B, provided with the flange *d* and recess *d'*, said flange *d* being formed integral with the beam B, the screw-head H, provided with the collar or flange *h*, the screw I, provided with the eye *i*, the bolt *f* and the beam E, pivotally attached to the beam B, substantially as and for the purpose specified. 2nd. The combination of the beam B, having attached to its front or forward portion the draft-bar G, the beam E, provided with the block or head F, and means for adjusting the beam E, substantially as and for the purpose specified. 3rd. The combination of the beam B, the beam E having the arms or bars *b, b'*, the disks J provided with the lugs K, the draft bar G, the clamping bolt *c*, and means for adjusting the beam E, substantially as and for the purpose specified.

No. 28,669. Cash and Package Carrier System. (*Système de transport de la monnaie et des paquets.*)

The Bostedo Package and Cash Carrier Company (assignee of Louis G. Bostedo and Horatio Thomas), Chicago, Ill., U.S., 10th March, 1888; 5 years.

Claim.—1st. In a cash and package carrier system, the combination, with a removable upper track section and an elevator guide-rod, of a slide secured on the guide rod and connected with said removable section, whereby the upward movement of the elevator removes the section, substantially as set forth. 2nd. The combination, with a swinging track section and an elevator guide-rod, of a ring slide mounted on the guide rod and connected with the swinging track section, and an elevator adapted to engage the ring and remove the track section, substantially as set forth. 3rd. The combination, with a removable track section, of a car elevator provided with a supplemental track section, and means for stopping a car on, and despatching a car from, the elevator track section, substantially as set forth. 4th. The combination, with an elevator track section, adapted to replace a removed track section, of a yielding abutment that stores the force of car momentum when a running car is stopped thereon, substantially as set forth. 5th. The combination, with an elevator track section adapted to replace a removable track section, of a yielding abutment that stores the force of car momentum when it is stopped thereon, and expands this energy in starting a car upon an upper track, substantially as set forth. 6th. A car receiver and elevator, adapted to automatically store the energy of a car brought to a stop thereon, and to automatically expand said energy in starting a car therefrom, substantially as set forth. 7th. The combination, with an elevator section adapted to occupy the positions of removable track sections, of a yielding vertically swinging abutment, substantially as set forth. 8th. The combination, with a yielding vertically swinging abutment, of the gravity latch or recoil check adapted to lock a car on the elevator track section, substantially as set forth. 9th. The combination, with the yielding abutment secured to the elevator section and provided with a series of ratchet teeth, of the spring actuated dog or pawl adapted to engage these teeth when a car is being received on a track section, and release the teeth when a car is being despatched therefrom, substantially as set forth. 10th. The combination, with a series of yielding abutments, of vertical swinging shoulder plates that are secured to a series of elevator track sections of cars provided with buffer plates, adapted to lift or clear all the abutments, excepting their own, substantially as set forth. 11th. The combination, with a car elevator, of a track section remover secured to the elevator by a pair of arms, substantially as set forth. 12th. The combination, with an elevator track section bar, of two sliding locking bolts that are adapted to move inwardly and release the bar when a car runs onto the elevator track section, and release a latch that locks these bolts extended, substantially as set forth. 13th. The combination, with a track section bar and two locking bolts held to slide in opposite directions onwise on this bar, of a pivoted latch bar that holds the bolts in extended adjustment, a spiral spring to force the bolts apart and a stud that is adapted to release the latch-bar from locked contact with the locking bolts when a car runs onto the elevator track section, substantially as set forth. 14th. The combination, with a track section bar, two sliding locking bolts that are made to move toward each other when they unlock this bar, and a spiral spring supported on a rod, so as to bear on the inner ends of the locking bolts, of a latch bar that is pivoted to one end of the locking bolt and lock both bolts extended, when said latch bar is held by a stud on the ratchet bar, substantially as set forth. 15th. In a back stop for the arresting of cars on the tracks of a two track cash and package carrier, the combination with a back stop or car arresting mechanism, of an elevator frame so arranged as to permit the back stop to be held clear of the track when the elevator is at a point of rest below the lower track, or in line with the lower track, and automatically assume a position to engage a rolling car on either track when the elevator frame is given a starting impulse upwardly, substantially as set forth. 16th. In a back stop for a cash and package carrier, the combination, with an elevator frame, two tracks and two upright guide bars, of a pivoted back stop, the buffer rod of which is adapted to be held in position to clear the track when the elevator is resting below the lower track, or in line with the lower track, and to be allowed to automatically assume a position to engage a rolling car when the elevator is moved from its points of support in an upward direction, substantially as set forth. 17th. In a back stop for a cash and package carrier, the combination, with an elevator frame, two tracks and two upright guide bars, of two pivoted back stops, one for each track, that are adapted to be held to clear the tracks, when the elevator frame is lowered to a point of rest below the lower track, or in line with the lower track, and also be released to resume a position that will cause them to arrest cars rolling on either a

lower or upper track, when the elevator frame is moved a short distance above the blocks or studs on which it rests and is still below the lower track, or between the two tracks, substantially as set forth. 18th. In a car for cash and package carriers, the combination, with two wheels, a frame piece, two standards depending from this piece, and two cross-bars secured to the standards, of a goods or cash receptacle, two hangers attached to the receptacle, a bar adjustably secured to the hangers, and an adjustable arm that is adapted to engage the cross-bars and limit the side swing of the basket or goods receptacle, substantially as set forth. 19th. In a car for cash and package carriers, the combination, with the depending standard of the car frame, by which the goods or cash receptacle is connected to this car, of a goods receptacle, two hangers, a horizontal bar secured by its ends to these hangers, an arm rigidly secured to the horizontal bar located between the depending standards of the car frame, and two elastic springs that are interposed between the sides of the secured arm and the adjacent faces of the hangers, substantially as set forth. 20th. In a car for cash and package carriers, the combination, with the two depending standards of the car frame, of a goods or cash receptacle, two hangers, a horizontal bar affixed to the hangers, an arm secured on this bar, and a spiral spring that encircles the bar and is adapted to cushion the arrested momentum of the loaded receptacle, substantially as set forth. 21st. An air cushion device that is adapted to cushion the descent of an elevator from a point slightly above the lower track, to seat it gently in line with this track, substantially as set forth. 22nd. An air cushion device that is adapted to cushion the descent of an elevator, and a car with its freight from the lower track to a proper point to rest below the lower track, and release the elevator when it is elevated in line with, or above the lower track, substantially as set forth. 23rd. The combination, with a tubular chamber, a valve at the upper end of the chamber, hinged to close automatically, and a piston head and rod, of a bracket arm, a double shouldered tilting hook, a pin on the elevator frame, and a pin on the well hole frame of the lower track, substantially as set forth. 24th. The combination, with an elevator frame and the tracks of a two-track store service system, of an air cushion device that is adapted to support the elevator on its downward passage from a point just above the lower track, substantially as set forth. 25th. The combination, with a tubular chamber, a valve at the upper end of this chamber, and a piston head and rod, of a bracket arm and a tilting double hooked latching bar that is adapted to engage a pin on the elevator frame, and a pin on the track well hole frame alternately to lock the piston rod of the air cushion device to the well hole frame, when released from the elevator frame and the reverse, substantially as set forth. 26th. The combination, with a forwarding track and a return track, located one above the other and provided with movable track sections at each station of an elevator, adapted to raise and lower the car and remove and replace the track sections, substantially as set forth. 27th. The combination, with a forwarding and a return track, each provided with a movable track section, of a car elevator provided with a track section lifter and with a tilting track section, substantially as set forth. 28th. The combination, with a forwarding track and a return track, each provided with a removable track section, of a car elevator provided with a track section lifter, and a track section to replace the removed track section in both the forwarding and return tracks, substantially as set forth. 29th. The combination, with a forwarding track having a track section hinged thereto, and a return track having a track section removably secured thereto, of a car elevator adapted to remove and replace the track sections in its upward and downward passage respectively, substantially as set forth. 30th. The combination, with the forwarding and return tracks, each provided with a removable track section, and a car elevator guide located near the removable sections, of brackets attached firmly to the main tracks and to the elevator guide, and the elevator adapted to slide up and down on the guide and remove and replace the track sections, substantially as set forth. 31st. In a car elevator, the combination of the four-armed supporting frame, the auxiliary supporting frame devices for tilting said auxiliary frame, the car supporting track sections secured to the auxiliary frame, and the track section lifter secured to the main supporting frame, substantially as set forth. 32nd. The combination, with a pair of uprights located in a plane at right angles to the line of track, of a track supporting bracket adapted to lock the uprights in position relatively to each other, substantially as set forth. 33rd. The combination, with a set of uprights located in a plane at an angle to the line of track, of a track supporting bracket adapted to embrace the uprights and lock them in position relatively to one another, substantially as set forth. 34th. The combination, with a set of uprights located in a plane at right angles to the line of track, of a track supporting bracket secured to the uprights in vertical adjustment and adapted to lock the uprights in position relatively to one another, substantially as set forth. 35th. The combination, with a set of uprights located in a plane at right angles to the line of track, of a skelson bracket adapted to embrace each of the uprights at two points, and means for locking the bracket to the uprights in different vertical adjustment, substantially as set forth.

No. 28,670. Combined Level, Plumb and Angle Obtaining Implement. (Niveau, plomb et cerce gradué combinés.)

Enos F. St. John, Highland Station, Mich., U.S., 12th March, 1888; 5 years.

Claim.—1st. As an improved article of manufacture, a spirit-level consisting of a stock, a semicircular spirit tube fitted in the stock, and a graduated semicircular plate above the tube, as specified. 2nd. As an improved article of manufacture, a spirit-level consisting of a stock, a semicircular spirit tube fitted in the stock, and a graduated semicircular plate fitted above the tube and formed with slots 4, through which the retaining screws are passed, substantially as described. 3rd. As an improved article of manufacture, a combined level and plumb consisting of a stock, a tube formed with quadrant sections 10 and a central section 11, said tube being fitted in the stock, and a graduated plate arranged in connection with the tube, substantially as described. 4th. As an improved article of manufacture, a combined level and plumb consisting of a stock, a tube formed with

quadrant sections 10, a central straight section 11, and a section 12 at right angles to the section 11, said tube being fitted within the stock, and a graduated plate arranged in connection with the tube, substantially as described. 5th. In a combined level and plumb, the combination, with a stock, of a tube formed with a quadrant-shaped section 10, a central straight section 11, a straight end section 12 and a globe 13 that is connected to the main body of the tube by a neck 14 and a graduated plate, the tube being held by the stock, and the plate being mounted in connection with the tube, substantially as described.

No. 28,671. Pump Suction Bucket.

(Clapet de pompe aspirante.)

James W. Cuthbertson, Bothwell, Ont., 12th March, 1888; 5 years

Claim. 1st. The combination of an inside body B, roughened or serrated at *b*, an outside body A and suction leather C, in combination with devices for clamping or securing them together and to the rod, substantially as shown and described and for the purpose specified. 2nd. The combination of the inside body B, formed, roughened or serrated at *b*, outside body A, section leather C and valve D, in combination with the attachments E having shoulders *e*, nuts G and rod F, substantially as shown and described and for the purpose specified.

No. 28,672. Harness Pad. (Cousinet de selle.)

William R. Empey, San José, Cal., U.S., 12th March, 1888; 5 years.

Claim.—In combination with a back strap, pads formed by means of a bottom of the same shape as the back strap, and stitched to it with the lower portions of its side edges and with its lower ends, and by two cross-rows of stitches at both sides of the middle, and by gussets or facings of spear-shape stitched to the side edges of the back-strap and of the bottom, the said pads being stuffed with any suitable stuffing, as and for the purpose shown and set forth.

No. 28,673. Bedstead Fastening.

(Ferrure de lit.)

Nelson H. Waters, Ellis, Ks., U.S., 12th March, 1888; 5 years.

Claim.—As an improved article of manufacture, the combined rail-fastening for bedsteads, and slat-support herein described, consisting of the socket plate B secured to the post formed with a tapered dovetailed socket B' therein, which only passes partially through the same, and tenon member secured to the rail cast in one piece with the broad flat side D, right angled end D', with tapered or wedge-shaped dovetailed tenon E, and lower flange F, and shoulder *f*, to form a seat or steps for the slat, as shown and described for the purposes specified.

No. 28,674. Land Roller or Clod Crusher.

(Rouleau d'agriculture ou brise-motte.)

Friedrich Boysen, Normanby, Ont., 12th March, 1888; 5 years.

Claim.—The combination of cast iron hollow discs or rings C, C, on wooden rollers B, B, in frame A, substantially as and for the purpose hereinbefore set forth.

No. 28,675. Grinding Mill. (Moulin à moudre.)

Robert A. Lister, (Co-inventor with George S. Richmond), Dursley, Eng., 12th March, 1888; 5 years.

Claim.—1st. In a grinding mill, a movable conical steel cylinder grooved on the inner surface, substantially as described. 2nd. A movable conical steel cylinder grooved on the outer surface and fixed upon a conical roller, substantially as described and for the purposes set forth. 3rd. A hinged adjusting lever with spring and thumb-screw, substantially as described and for the purposes set forth.

No. 28,676. Axial Pin and Pintle.

(Axe et aiguillot.)

Charles F. Gildersleeve, (assignee of Charles McWilliams), Kingston, Ont., 12th March, 1888; 5 years.

Claim.—1st. The axial pin or pintle composed of the cylindrical part A, having an inwardly tapering periphery and a reduced stem B, the removable cylinder C, having an inwardly tapering periphery and sleeved on said stem, and a nut E, or bolt and nut D E, to draw the parts A and C endwise together, as set forth. 2nd. The combination, with the connecting parts of a movable joint, of the tapering parts A and C sleeved together, and a nut E, or a bolt and nut D E, to draw the two parts endwise together, as set forth. 3rd. The combination of two cylindrical parts A and C sleeved together, and bolt and nut D E, to draw said parts endwise together, as set forth.

No. 28,677. Screw. (Vis.)

Charles H. Hutchinson and Bradbury P. Cilley, (assignees of George B. N. Dow), Manchester, N.H., U.S., 12th March, 1888; 5 years.

Claim.—1st. As a new article of manufacture, a screw having a countersunk head and a traverse parallel-sided slot for the reception of the driver, as described. 2nd. As a new article of manufacture, a screw provided with a concave head and a longitudinally-curved slot situated diametrically across said concave head, substantially as described.

No. 28,678. Filtering Machine.

(Machine à filtrer.)

James A. Crocker, New York, N.Y., U.S., 12th March, 1888; 5 years.

Claim.—1st. As an improvement in rotating filtering machines having single shell or casing, an automatic valve F actuated by gravity, in combination with, and for alternately opening and closing, the

ports *h, i*, of the inlet water passage *d*, substantially as described. 2nd. An automatic valve *G* actuated by gravity, in combination with, and for alternately opening and closing the ports *m, n*, of the outlet water passage *e*, substantially as set forth. 3rd. In combination with an outlet water passage *e* of a rotating angle casing, a gravitating valve *G* of a length exceeding that of the said water passage, as and for the purpose specified. 4th. A rotating filtering machine consisting essentially of the following named elements, viz: a single independent shell or casing *A* containing filtering material, water passages *d, e*, at opposite ends of the casing, a pair of ports for each water passage, gravitating valves *F* and *G*, for alternately opening and closing said ports, stationary hollow journals *B, C*, which constitute fixed supply and discharge pipes, and bearings *D, D*, for said journals, the several parts being constructed to operate substantially as described. 5th. In combination, a hollow journal with a flange *g* at its inner end, a hollow hub formed integral with the casing *A*, an interposed packing *s*, an annular ring *u*, a screw-threaded sleeve *L* with its flanges *q, r*, a nut turning over said sleeve, and screws or bolts *t* passing through the sleeve into the hub, as and for the purpose set forth.

No. 28,679. Boring Machine. (Machine à percer.)

Wallace H. Dodge, (assignee of Charles McNeal), Mishawaka, Ind., U.S., 12th March, 1888; 5 years.

Claim.—1st. The carriage whereon the blank is supported and moved to position, combined with the latch *p* attached to said carriage, and the movable rack-plate *J*, provided with two or more racks *d* differently spaced, whereby, by moving said rack-frame *J*, either one of said racks may be placed in line with the latch *p*, as set forth. 2nd. The adjustable rack-frame *J*, provided with racks having notches *e* in series mounted on the table *I*, and the carriage *K* mounted to move on the guides *f* on said table *I*, provided with the latch *p* adapted to engage either one of said racks, as the case may be, combined with the carriage *L*, mounted to move on said carriage *K*, at right angles to the direction of the guide *f*. 3rd. The rack frame *J* provided with a series of different racks, and the carriage *K*, mounted to move on guides *f* and provided with latch *p*, adapted to engage with the notches of said rack, combined with the carriage *K*, capable of adjustment as to inclination to hold the arm *H*, while the nail-holes *c* are being bored obliquely, as set forth. 4th. The rack-frame *J*, provided with a series of different racks, the carriage *K*, mounted to move on the guides *f*, and provided with a latch *p* mounted at the end of the lever *k*, combined with the carriage *L* mounted to move on the carriage *K*, as set forth, and provided with a trip-latch adapted to unlock the latch *p*, when said carriage *L* is moved in one direction, and pass it undisturbed when moved in the opposite direction. 5th. The rack-frame *J*, provided with a series of different racks, and the carriage *K*, mounted to move on guides *f*, and provided with the latch *p* attached to the lever *k*, pivoted to the carriage *K*, combined with the carriage *L* provided with the swinging trip *q*, to release said latch when said carriage moves in one direction. 6th. The carriage *K*, adapted to reciprocate on the guides *f*, and the carriage *L* adapted to move on the carriage *K*, in a direction transverse to the guide *f*, combined with the adjustable step stop-plate *a* and the stop *t*, substantially as and for the purpose set forth. 7th. In combination, in a boring machine, the sliding mandrel *C*, revolving in vertical bearings and beneath it the carriage *K*, mounted to move forward and backward on the guide *f*, the carriage *L* mounted on said carriage *K* and movable toward the right hand or left on guides thereon, a notched spacing-rack *d* below said carriage *K*, and a latch *p* to engage therewith, whereby the backward movement of the carriage may be made step by step, as set forth.

No. 28,680. Hose Coupling. (Manchon de boyau.)

Frederick W. Tuerk, jr., Syracuse, N.Y., U.S., 12th March, 1888; 5 years.

Claim.—1st. The here described blank for hose-coupling bands, consisting of a metal band having a straight central portion, and curved ends provided with oppositely arranged projecting extensions formed integral therewith, the longitudinal edges of the blank adjacent to the extensions being provided with ribs, which form guides for the extensions when the blank is bent into shape for use, and the ends of the blank provided with holes for the clamp bolt, substantially as and for the purpose set forth. 2nd. As a new article of manufacture, a hose-coupling band formed of metal having oppositely arranged extensions on its ends, interlocking with ribs formed on the inner edges thereof, and a clamp bolt passing through lugs on the ends of the band, to secure the band on the hose-coupling, substantially as and for the purpose set forth. 3rd. The combination of the band *A* having oppositely arranged projecting extensions *E, E*, ribs *b, b*, on inner side adjacent to the extension *E*, ribs *a* on outer side of the band lugs *D, D*, recess *g* for the nut *H* and the bolt *G*, all substantially as and for the purpose set forth. 4th. The cast metal hose-coupling band *A* having extensions *E, E*, oppositely arranged on the ends thereof, ribs *b* on the inner side of the band lugs *D, D*, on the ends, and strengthening ribs *a, a*, flaring to the top of the lugs, substantially as and for the purpose set forth.

No. 28,681. Centrifugal Reel. (Blutoir centrifuge.)

The George T. Smith Middlings Purifier Company, Stratford, Ont., (assignee of Zenas C. Eldred, Jackson, Mich., U.S.), 12th March, 1888; 5 years.

Claim.—1st. The combination, with the drum provided with the longitudinal blades, of the bolting reel and the tilting elevators, substantially as set forth. 2nd. In a flour bolt, the combination, with an outer relatively slow moving bolting reel provided with internal elevators, of an inner relatively fast moving drum adapted to receive material carried up by the elevators and discharge the same against the bolting cloth, substantially as set forth.

No. 28,682. Caster Wheel for Beds, Chairs, etc. (Roulette de meuble)

Hubert R. Ives, Montreal, Que., 13th March, 1888; 5 years.

Claim.—1st. As a new article of manufacture, a caster wheel having the tread with its edges turned inward towards the centre, as shown. 2nd. As a new article of manufacture, a caster wheel with a straight hub and a rim on ends, as shown. 3rd. As a new article of manufacture, a caster wheel having a straight hub with a ring, a central web and a tread or periphery turned inward at its edges, substantially as described.

No. 28,683. Hot Air Stove. (Calorifère à air.)

Robert S. Chalmers, Council Bluffs, Iowa, U.S., 13th March, 1888; 5 years.

Claim.—A hot air stove comprising the following elements a fire-pot surrounded by a fire-chamber communicating at its rear with an ash-pit a horizontal plate *Y* in said ash-pit, adapted to direct the products of combustion forward and then backward, an outlet pipe *a* leading from the rear part of the ash-pit, an air-heating chamber *D*, directly above the fire-pot, provided with a deflecting plate *Y*, a cold air pipe *G* leading into said chamber *D*, below the said plate *Y*, with its opposite end opening between the ash-pit and the lower end of the escape flue *A*, and a direct draft-pipe *Z*, provided with a damper *n*, and forming a communication between the chamber *E* and pipe *a*, when said damper is open, all substantially as described.

No. 28,684. Water Heater. (Calorifère à eau.)

David L. Dinnell, Montreal, Que., 13th March, 1888; 5 years.

Claim.—1st. In a boiler or water heater, the following combination, the water back divided up by horizontal and zig-zag diaphragms, and having common top and bottom chambers, the water jacket round fire-pot and pipes connecting same with bottom of water back and the top and pipes connecting same with top of water back, all as and for the purposes set forth. 2nd. In a boiler, the combination, with the water back divided up by zig-zag diaphragms, of rows of pipes *z* into, or cast on the front of such water back, and horizontal diaphragms intersecting such water back at the levels of the rows of pipes and extending halfway into same all as hereinafter described and for the purposes set forth. 3rd. In a boiler, the combination of the casing water back pipes set in, or cast on same, and extending nearly to front of fire chamber water jacket round fire-pot, smoke chamber, upper and lower outlets from same, and smoke pipe, all as herein set forth. 4th. In a boiler and in combination, the top connected with the water back, a transverse diaphragm forming chamber at front of same, diaphragms dividing up such chamber into smaller chambers, outlet pipes taken from each of such smaller chambers, openings through main diaphragm into such chambers, and valves mounted on spindles passing through the front of the heater, all as and for the purposes described.

No. 28,685. Side-Bar Vehicle. (Viture à sommier de côté)

William H. Bowe, Cincinnati, Ohio, U.S., 13th March, 1888; 5 years.

Claim.—1st. The combination of the vehicle body and side-bars, the spiral spring *C* supported within the body, the bolt *B* and cross-head *B* and adjusting nut *c*, the radially disposed springs *E* having their inner ends coupled to the cross-head and their opposite ends shackled to the side-bars, and the fulcrum clips for connecting the springs intermediate their ends to the body bottom, substantially as shown and described. 2nd. The combination, substantially as hereinbefore set forth, of the vehicle body and side-bars, the spiral spring *C* resting within the body, the bolt *B* and cross-head *B*, its brackets and perforated bosses, the springs *E*, links for coupling them to the cross-head, shackles for coupling them to the side-bars, and clips intermediate the spring ends for uniting them to the body. 3rd. The combination, substantially as specified, of the body *A, A*, *A'*, and the side-bars, the spring *C*, nut *c*, bolt *B* and cross-head *B*, the spring *E* coupled to the cross-head and side-bars, and the fulcrum clips consisting of the angle lugs *H*, rocking to bar *I* and clip *F*, for connecting the springs to the bottom pieces *Az*.

No. 28,686. Car-Coupling. (Attelage de chars.)

William DeCew, Aslmer, Ont., 13th March, 1888; 5 years.

Claim.—1st. The pivotal coupling pin *B*, pivotal coupling hook *D*, and bearing *C*, in combination with the draw-bar *A* formed with a hooked end *a*, rod *F* and spring *E* for the purpose specified. 2nd. The locking lever *H* and plate formed with catches or notches *K*, in combination with the pivotal coupling pin *B*, pivotal coupling hook *D* and draw-bar *A*, formed with a hooked end *a*, for the purpose specified. 3rd. A draw-bar *A*, moving lengthwise under the frame of the car, in combination with the retaining lever *J*, for the purpose specified. 4th. The pivotal coupling-pin *B*, pivotal coupling-hook *D*, bearing *C* and forked bearing or guide *C'*, in combination with a draw-bar *A*, having a hooked end *a*, formed round at *a*, rod *F* and spring *E*, for the purpose specified. 5th. The pivotal coupling-pin *B*, pivotal coupling hook *D*, bearing *C* and forked bearing or guide *C'*, in combination with a draw-bar *A*, having hooked end *a*, rod *F*, spring *E*, levers *H, I, J* and rod *W*, formed with elevations *H* and *H'*, and a plate formed with catches or notches *K*, for the purpose specified.

No. 28,687. Rotary Shingle Machine. (Machine à bardan rotative.)

Patrick O'Connor, Ludington, Mich., U.S., 13th March, 1888; 5 years.

Claim.—1st. In a shingle machine, the combination of a series of circular saws travelling horizontally and in the same direction, the rotary carriage for presenting the shingle blocks to said saws, said rotating carriage adapted to travel over said saws and to revolve horizontally, in an opposite direction to that travelled by the saws, as and for the purposes specified. 2nd. In a shingle machine, the combination of a series of horizontally rotating circular saws travelling in the same direction, a horizontal rotating carriage adapted to travel over said saws and in an opposite direction, and the series of

friction shoes σ located adjustably below the outer periphery of the rotating carriage, as and for the purposes set forth. 3rd. In a shingle machine and in combination, the circular saws travelling in the same direction, the rotating carriage travelling in an opposite direction to said saws, said carriage being provided with a series of shingle block compartments, the soft metal corrugated dogs, the series of sliding heads working in end slides and having central slides β , the series of levers pivoted to the periphery of the carriage, one end of each lever engaging with a sliding head, the other carrying a friction wheel, the rod and spring for operating each lever, the stationary tracks R , the tilting tables located in advance of each saw, and a shingle thickness below said saws, the circular tracks located below the carriage and between the saws and said tilting tables, as and for the purposes set forth. 4th. In a shingle machine, the combination of a series of circular saws, a rotary carriage having shingle block compartments adapted to travel over said saws, and mechanism for automatically grasping and releasing said shingle blocks, a table located in advance of each saw, and circular tracks leading from said saws to said tables, a section of said track adapted to be swung outward or disconnected for the purpose of discharging a shingle block from the machine, substantially as specified. 5th. In a shingle machine, and in combination, a circular saw, a travelling carriage adapted to travel over said saw, said carriage being provided with a shingle block compartment, and a track located below the carriage, and having a section adapted to be disconnected or swung outward for the purpose of discharging a shingle block from the machine while in motion, substantially as and for the purpose specified. 6th. In a shingle machine, the combination of the uprights B , the stationary frame mounted on said uprights, the annular carriage, the spider and shaft for supporting said carriage, the mechanism for driving said carriage, the series of shingle block compartments, the mechanism for grasping and releasing said shingle blocks, the tilting tables located in advance of said saws, the circular tracks leading from said saws to said tilting tables, the track-section β being pivoted or hinged at one end, the rod d pivoted to said section, said rod being attached to the reciprocating bar K , said bar at its upper end being provided with a dog f , and mechanism for raising and lowering said dog, the series of lugs z mounted on the periphery of the carriage, said lugs adapted to engage with the dog f , when in a vertical position, whereby the track β is caused to swing outward, and the cord and weight W for bringing said track section back to its normal position, for the purposes specified. 7th. In a shingle machine, and in combination, the rotating carriage having a series of lugs z on its outer periphery, the reciprocating bar K pivoted at its lower end and carrying a dog pivotally at its upper end, the rod d pivoted to said dog and having the spring-holding device and stop n , the track-section β and rod d , having one end attached to the bar K , the other to the swinging track section β , and rod d , having one end attached to the bar K , the other to the frame H , for the purposes set forth. 8th. In a shingle machine, the combination of the saws, the revolving carriage, the tilting tables located in advance of the saws, said tables being provided with depending or tilting arms, said tilting arms being pivotally fulcrumed upon the horizontal arms A , the inner ends of said arms A being adjustably attached to the stationary frame H , by the bolts working in slots 36 , the other or free ends being provided with vertical adjustments for raising and lowering said tables, for the purposes set forth. 9th. In a shingle machine, the combination of the stationary frame H , mounted on suitable supports, the revolving carriage located over said frame and having a series of horizontally projecting shafts o on the inner periphery of said carriage, the table operating shafts Y , Y the wheels mounted on the upper ends of said shafts o , said wheels having on their periphery the lugs f and spaces Z , the yokes 16 pivoted to said shafts carrying the rod E and coiled springs L , the tables T and mechanism for tilting said tables, as and for the purposes specified. 10th. In a shingle machine, the combination of the stationary frame, the rotary carriage, the circular saws, the circular track located below said carriage, the tilting tables located in advance of the saws and having the depending arms m , said tables being fulcrumed on adjustable supports, the shafts Y , Y , each carrying a wheel F , said wheels adapted to engage with the lugs f of the rotating carriage, as specified, the cams located on the lower ends of said shafts Y , each cam having a friction brake r , and a tilting yoke with arms carrying friction bearings operating against the cams, the vertical levers pivoted to the arms r , and intermediate parts coupling to the lower ends of the table tilting arms m , as and for the purposes specified. 11th. In a shingle machine, the hand-setting device for tilting the tables, consisting of the hand lever J , pivoted at e to an upright of the machine and carrying the catches L , in combination with lugs o , the cams o , the shafts Y , the wheels F , having lugs f adapted to engage with the lugs o of the carriage, and weight and cord for bringing said hand lever back to its normal position, as and for the purposes set forth. 12th. In a shingle machine, the combination of the saws, the rotating carriage, the tilting tables pivotally mounted on adjustable supports and having depending arms, the vertical shafts Y , Y , each carrying a wheel at the upper end, said wheels adapted to be revolved by the lugs f on the rotating carriage, the cams mounted on said shafts, the tilting yokes pivotally mounted on said shafts below the cams, and having arms carrying friction-bearings, adapted to be operated by the turning of said cams, the vertical bars pivoted to the arms r and carrying set-screws G , G , operating on the horizontal arms of the elbow levers h , said levers being pivoted at 49 to the brackets B , the connecting bars h attached at one end to the elbow levers, and at the other end to the table arms m , the rods attached to the horizontal ends of the elbow levers, and having one end loosely fitted to the pivoted thimbles 5 , and coiled springs for holding the elbow levers h when shifted, and hand mechanism for partially rotating said cams, substantially as specified.

No. 28,688. Sleigh. (*Transeau*.)

Austin Berry, Warden, Que., 13th March, 1888; 5 years.

Claim.—1st. The combination of a sleigh body and runners, with elliptic springs supporting such body and having their ends bearing directly on the runners and attached thereto, all substantially as herein set forth and for the purposes described. 2nd. In combination with a sleigh body, and in combination, the runners with return-

ed ends, stiffening pieces secured on top of the runners, and having their ends turned over and attached rigidly to the returned end of runners, and springs hung at both ends to the junction of the runners and stiffening pieces, and carrying the body of the sleigh, all as herein set forth. 3rd. The combination, with the sleigh body, springs supporting same, and runners to which such springs are secured, of jointed connections from front of sleigh body to runners, as and for the purposes set forth.

No. 28,689. Hand-Cuff. (*Menotte*.)

DeWitt C. Alden, Bath, N. Y., U. S., 13th March, 1888; 5 years.

Claim.—1st. In a hand-cuff, the combination of a frame provided with projections for the fingers to catch against, the endwise moving rod, the connecting rods and the pivoted jaws connected to the rods, substantially as shown. 2nd. The combination of the frame, provided with projections for the fingers to catch against, the endwise moving spring actuated handle rod, the connecting rods connected to the inner end of the handle rod, and the pivoted jaws provided with pins, substantially as described. 3rd. In a hand-cuff, the combination of the frame provided with projections for the fingers to catch against, the spring actuated endwise moving handle rod, the connecting rod connected to the inner end of the handle rod, the pivoted jaws which are operated by the connecting rods, and a spring actuated catch for preventing the handle rod from being forced inward, substantially as set forth. 4th. The combination of the frame A , provided with the projections B upon opposite sides, the endwise moving handle rod, provided with a pin or projection, the two connecting rods which extend in opposite directions, the pivoted jaws provided with plates and pins upon their inner ends, the spring which is placed around the handle rod, and the spring catch which is recessed in the side of the handle rod and made to engage with the frame A , substantially as specified.

No. 28,690. Moccasin Shoe. (*Mocassin*.)

John E. Booth, Bangor, Me., U. S., 13th March, 1888; 5 years.

Claim.—In combination with the bottom of a moccasin, when formed to turn up around the edges of the foot, a tip, having at the rear extremity of each side an ear or laplet, of sufficient length to lap over the upper edge of the bottom of the moccasin, and to be riveted or otherwise secured thereto, substantially as described.

No. 28,691. Machine for Shaping Wood.

(*Machine à façonner le bois.*)

Charles L. Goehring, Allegheny, Penn., U. S., 13th March, 1888; 5 years.

Claim.—1st. In a wood shaping machine, the combination of a reciprocating work support, arbor frames carrying outer-heads and reciprocating in guides transversely of the work support, a pattern or cam plate reciprocated in unison with the work support, and engaging bearings or rollers on the arbor-frames, at or near the plane of the supporting ways for the latter, and a yielding tension or pressure device operating upon the arbor-frame to hold it against the pattern, substantially as described. 2nd. In a wood shaping machine, the combination with the work support and cam plate connected together to reciprocate in unison, and each sustained in separate ways or guides, two arbor-frames reciprocating in guides transversely of the work support and on opposite sides thereof, each of said arbor-frames carrying a roller in engagement with the cam plate, and bearings supporting a vertical spindle carrying a cutter-head and a driving pulley, the latter applied to the spindle intermediate the outer-head and the roller engaging the cam plate, substantially as described. 3rd. In a wood shaping machine such as described, and in combination with the reciprocating cam plate and attached work support, each supported in guides, the transversely reciprocating arbor-frame supported in ways opposite the cam plate and provided with a roller held in engagement with the latter by a weight, a spindle mounted in bearings on said arbor-frame and carrying a cutter-head, and a driving pulley secured to the spindle intermediate the bearings and at a point between the cutter-head and the roller, substantially as described. 4th. In a wood shaping machine such as described, and in combination with the reciprocating work support and pattern or cam plate, an arbor-frame supported in ways and provided with a roller held in engagement with the cam plate, and bearings for a spindle carrying the cutter-head, a driving pulley secured to said spindle, and rollers interposed between the arbor-frame and the supporting guides or plates on opposite sides of the pulley and on the side of the arbor-frame towards which the belt is drawn, substantially as and for the purpose set forth. 5th. In a wood shaping machine such as described, the combination with the reciprocating work support and cam plate, and the transversely reciprocating arbor-frames engaging the cam-plate and carrying the spindles and cutter-heads, the pressure rolls applied above the work support and co-operating therewith to sustain the material in position while being operated on by the cutters, as set forth. 6th. In a wood shaping machine such as described, the combination with the reciprocating work support mounted in guides or ways, the pattern or cam plate connected to said work support and reciprocating in guides or ways beneath the latter, two arbor-frames supported in ways on opposite sides of the cam plate and provided with rollers held in engagement with the latter by weights, each of said arbor-frames being provided with bearings, a spindle supported therein, and a cutter-head projecting above the work support, as set forth. 7th. In a wood shaping machine such as described, the combination with the reciprocating work support and cam plate, and the transversely reciprocating arbor-frames actuated by the cam plate, automatically actuated clamping jaws carried by the work support, and a grooved or collared presser roll for engaging and holding the material and permitting the passage of said jaws, substantially as described. 8th. In a wood shaping machine such as described, and in combination with the reciprocating work support and the clamping jaws mounted thereon, a cam track for actuating one of said jaws to grasp or release the material, said cam track being provided with a series of cam grooves and latches, as and for the purpose set forth. 9th. In a wood shaping machine

such as described, the combination, with the reciprocating work support provided with clamping devices, the feed rollers located on opposite sides of the path of the work support and adapted to grasp and remove the material from the work support, as set forth. 10th. In a wood shaping machine such as described, and in combination with a reciprocating work support, a pair of rollers supported in yielding bearings and arranged in line with the material on the work support, said rollers serving to grasp and remove the material at or near the end of the forward movement of the work support, as set forth. 11th. In a wood shaping machine of the character described, the combination, with the reciprocating work support and automatically operating clamping dogs carried thereby, rollers located at or near the end of the forward movement of the work support, and adapted to engage and remove the finished material when released by the dogs, substantially as described. 12th. In a wood shaping machine such as described, and in combination with the reciprocating work support, the yielding dogs located in the path traversed by the material on the work support and yielding to its forward movement, but closing to prevent the return of the material, substantially as described. 13th. In a wood shaping machine, the combination of a stationary table having a slot through its centre and a cam plate depending in close proximity to the slot, said cam plate having switches, cross cam grooves and latches arranged substantially as indicated, of a reciprocating work support carrying a set of locking dogs operated automatically by engagement with the cam grooves, substantially as described. 14th. In a wood shaping machine, the combination with a reciprocating work support and laterally movable cutter-heads, of an oscillatory reciprocating cutter-head for operating upon the face of the material, substantially as described. 15th. In a wood shaping machine, the combination, with devices for advancing the material and a pattern or cam plate moving in unison therewith, an oscillatory reciprocating cutter head arranged to cut in lines parallel to the edge of the pattern, substantially as described. 16th. An oscillatory reciprocating cutter consisting essentially of an oscillatory reciprocating frame and a rotary cutter-head mounted thereon, substantially as described. 17th. An oscillatory reciprocating cutting mechanism consisting essentially in the combination of an oscillatory reciprocating frame, a rotary cutter thereon, weights or equivalent yielding devices for holding the devices in proper relation to a pattern and the material to be dressed, substantially as described. 18th. An oscillatory reciprocating cutting mechanism consisting essentially of a reciprocating slide, an arbor-frame pivotally attached thereto and provided with rollers or bearings held in contact with a pattern or cam plate by a weight or equivalent mechanism, and a spindle carrying a cutter-head mounted in said arbor-frame, substantially as described. 19th. In combination with a stationary frame or table and a work support reciprocating in a slot therein, of housing spanning the said slot, and a toothed wheel adapted to engage and hold the material being operated upon rigidly in place on the reciprocating work support, substantially as described. 20th. In combination with a slotted table and a work support reciprocating therein, a frame or housing spanning the slot and detachably secured to the table, a yielding idle wheel or roller mounted in said frame and automatically operated gripping dogs, substantially as described. 21st. The combination, with a reciprocating work support and a pattern or cam plate carried thereby, two transversely reciprocating arbor-frames located on opposite sides of the work support and actuated by the cam plate to dress the edges of the material on the work support, and an oscillatory reciprocating cutter-head actuated by a pattern or cam plate and adapted to do its cutting in lines parallel with the pattern edge, substantially as described. 22nd. In a wood shaping machine such as described, the combination, with the reciprocating work support and a reciprocating cam plate, an arbor-frame pivotally attached to a slide and provided with a spindle having a cutter-head projected across or above the work support, said arbor-frame being reciprocated and oscillated by means of two bearings or rollers held in contact with the cam plate by yielding pressure devices, substantially as described. 23rd. In combination with a reciprocating pattern or cam plate, an arbor-frame pivotally connected to a sliding base or plate and bearing against the cam plate on opposite sides of the pivot, and a spindle mounted in bearings on said arbor-frame and carrying a cutter-head in position to operate upon the material, substantially as described. 24th. In combination with the arbor-frame pivotally attached to a slide, and provided with bearings or rollers engaging a pattern or cam plate at two points to oscillate and reciprocate said arbor-frame, a spindle to which the cutter-head is secured, mounted in bearings on the arbor-frame and projecting across one of the bearings or rollers engaging the cam plate, substantially as and for the purpose set forth. 25th. In a wood shaping machine such as described, and in combination with a reciprocating work support and two edge or side cutters controlled in their movements towards and from the material by a pattern or cam plate, an oscillatory reciprocating cutter-head held in position to act upon the face of the material and actuated by a pattern or cam plate, to vary the direction of application to the material as the latter is advanced, substantially as described. 26th. In a wood shaping machine such as described, the combination with the reciprocating work support and side cutters, a removable oscillatory reciprocating cutting attachment adapted to operate upon the face of the material, substantially as described. 27th. In a wood shaping machine such as described, the combination, with suitable mechanism for feeding or advancing the material, a cutting mechanism arranged on each side and reciprocated by, or in conformity to, an actuating cam or pattern to dress the opposite edges of the material, and a cutter-head standing above the material with devices for giving to said cutter-head an oscillatory reciprocating movement, whereby the edges of the material are dressed and formed, and the surface grooved or ornamented, substantially as and for the purpose set forth.

No. 28,692. Automatic Apparatus for Extinguishing Fires on Cars, etc.
(Appareil automatique pour éteindre le feu sur les chars, etc.)

Isaac T. Dyor, Chicago, Ill., U.S., 13th March, 1888; 5 years.

Claim.—1st. An automatic apparatus for extinguishing fires on cars and other moving conveyances, consisting of the tank A in combina-

tion with the partially rotating reciprocating and longitudinally reciprocating cylindrical valve M, provided with a seat C and surrounding ports J on its top portion, and with an opening R in its lower portion, and a valve case B, crank piston rod P, D, the pendulum L, L', C', for operating the rod, and a pipe F leading from the valve chamber B to a stove or furnace. 2nd. The combination of the valves M, C, M', valve chambers B, B', crank piston rod P, D, with the tank A, pipe K leading from the valve M into the top portion of tank A, a pipe F leading from the chamber B to a stove or furnace, a pipe N leading from chamber B to a lamp, and the weighted pendulum C, L, L', as and for the purpose specified. 3rd. The rod L' supporting the ball C, and the guide rod L hung to the arm J and made to slide in the ball C, in combination with the crank rod D, P, as specified. 4th. The combination of the ball C, pendulum rods L, L', arm J, crank rod D, P, valves M, C, M', case with the springs 10, collars 12, catches 11, and a tank A, for holding and discharging fire extinguishing fluid, as specified.

No. 28,693. Tobacco-Cutter. (Nache-tabac.)

Harry S. Pell, Toronto, Ont., 13th March, 1888; 5 years.

Claim.—1st. A tobacco cutter comprising essentially of a case having an opening for the edge of the plug, a plunger or slide working within said case, a spring for returning same, and a knife attached to said plunger, substantially as and for the purpose described. 2nd. The combination, in a tobacco cutter, of a case having an opening for the edge of the plug, a plunger working within said case, a spring for returning same, a knife attached to said plunger, and a discharge opening for the cut tobacco, substantially as and for the purpose described. 3rd. In a pocket tobacco-cutter, the combination, with the case A, plunger B and knife C, of the gauge D, moving with the plunger, substantially as described. 4th. In a pocket tobacco-cutter, the combination, with the case A, cap or cover a', having catch d', of the plunger B carrying the knife and spring gauge D, attached to said plunger and adapted to engage with said catch d', substantially as and for the purpose described. 5th. The combination of the case A having projection d, and plunger B carrying the knife, and spring gauge D, for the purpose set forth. 6th. The combination, with the case A having tobacco chamber a', plunger B, knife C, of the clearing device F for the purpose specified. 7th. In a tobacco-cutter, the combination of the following elements, viz., case A having opening a', tobacco chamber a', cap a', spring E and spring chamber a', plunger B, knife C and gauge D, for the purpose described.

No. 28,694. Hydrocarbon Burner.

(Foyer à hydrocarbures.)

James A. Cowles, Chicago, Ill., U.S., 14th March, 1888; 5 years.

Claim.—In combination with a stove, a diaphragm placed within the fire-box provided with a narrow opening, its greater length, a gas retort below the diaphragm connected with an elevated tank and provided with a regulating valve, a perforated pipe connected with the gas retort and a perforated diffuser, substantially as shown.

No. 28,695. Match. (Allumette.)

James S. Foley, Chicago, Ill., U.S., and Joseph Ruse, Toronto, Ont., 14th March, 1888; 5 years.

Claim.—1st. A stub-shaped piece of material having one end covered with igniting material without increasing the main diameter of the stub, substantially as and for the purpose specified. 2nd. A stub-shaped piece of material having one end reduced in diameter so that a supply of igniting material may be applied to it, without increasing the main diameter of the stub, substantially as and for the purpose specified.

No. 28,696. Transformation Picture and Print. (Transformation d'image ou d'impression.)

Thomas Leeming, New York, N.Y., U.S. (assignee of Andrew Reid and John Jameson, Newcastle-upon-Tyne, Eng.), 14th March, 1888; 5 years.

Claim.—1st. A transformation picture or print consisting of a backing, having an indelible imprint thereon, and a delible print on said imprint and backing, concealing in whole or in part the imprint, substantially as described. 2nd. A transformation picture or print consisting of an indelible imprint, and two or more separate printings superimposed in films soluble in different media, so as, on application of the solvents of the films, to develop transformations, substantially as described. 3rd. A transformation picture or print consisting of a backing or sheet, a fixed design or imprint on the backing or sheet, and a removable design or printing concealing the whole, or in part, the fixed design or imprint, and adapted to be washed off without destroying the latter. 4th. A transformation picture or print, consisting of a backing or sheet, a fixed design or imprint on the backing or sheet, a coating on said fixed design or imprint, and a removable design or printing over the fixed design or imprint, concealing the whole, or in part, substantially as described.

No. 28,697. Drain Tile Trap. (Trappe d'égoût.)

John Maguire and Robert Carroll, Toronto, Ont., 14th March, 1888; 5 years.

Claim.—1st. A trap, in which the outlet C is below the level of the seal in the trap B, substantially as and for the purpose specified. 2nd. A trap, in which the inlet pipe is above the level of the outlet pipe, in combination with a seal-protector D, located between the trap B and outlet C, substantially as and for the purpose specified. 3rd. A trap, in which the inlet pipe is above the level of the outlet pipe, in combination with a seal-protector D, located between the trap B and outlet C, and having a flange a formed on it, substantially as and for the purpose specified. 4th. A trap, in which the outlet is below the level of the inlet, and has a seal protector located between the outlet and seal proper of the trap, in combination with the hand-

hole F, arranged substantially as and for the purpose specified. 5th. A trap, in which the outlet is below the level of the inlet, in combination with a vent-hole E, located substantially as and for the purpose specified.

No. 28,698. Head-Rest for Sleeping Cars.

(*Appui-tête pour chars à voyageurs*)

Thomas A. Bissell, Buffalo, N.Y., U.S., 14th March 1888; 5 years.

Claim.—1st. The combination, with the seat back and partition wall between the seats or sections of a sleeping car, of a combined head-rest and wall pocket, and a double hinge pivotally connecting said head rest and partition wall substantially as described. 2nd. The combination, with a seat back and partition wall between the seats or sections of a sleeping car, a head-rest formed independent of said seat back, and the means, substantially as described, pivotally connecting said head-rest and partition wall, for elevating said head-rest into an inclined position, with relation to such partition wall, and a tongue on said head-rest to engage the partition wall, substantially as and for the purpose specified. 3rd. In combination with the seats or sections of a sleeping car, a head-rest, the means, substantially as described, pivotally connecting said head-rest and partition wall, for elevating such head rest and converting the same into a wall pocket, and the means, substantially as described, on said rest, engaging a socket in the partition wall for locking the same in that position, substantially as described. 4th. The combination, with the partition wall A having the socket B, and the head-rest, of the piece F secured to the lower end of said head rest and provided with the tongue G, and the double hinge H pivotally connected with said head-rest and partition wall, substantially as and for the purpose specified.

No. 28,699. Mailing Machine.

(*Machine postale*)

Robert J. Taylor, Ottawa, Ont., 15th March, 1888. 5 years.

Claim.—1st. In a mailing machine, the combination of a frame supporting a reservoir, rollers, cutting bar, knife plate and operating mechanism, a trough or reservoir, a dipping roller journaled in or above the same, a feed roller in contact with said dipping roller and provided with a ratchet, a knife plate adapted to slide vertically and carrying a knife and press shoulder, a cutting bar adapted to be passed by said knife, a lever fulcrumed to the frame and connected to said knife plate by a link, and adapted to give a vertical reciprocating movement thereto, a lever carrying a pawl engaging the ratchet of said roller, and the weighted reverse end passing over said knife plate, and adapted to be lifted by the same, and its vertical movement regulated by a slotted gauge secured to the fulcrum standard, substantially as set forth. 2nd. In a mailing machine, the combination of the frame A, Ar, Au, Av, a reservoir B, the roller C dipping in said reservoir, a feed roller D in contact with roller C, and provided with a ratchet d, a knife plate E, carrying a knife Et and press shoulder Eui, a cutting bar F adapted to be closely passed by said knife, a gauge G adapted to prevent the strip P being lifted, the lever L fulcrumed upon said frame, and connected to the knife plate by a link H, a lever I having a weighted end and passing over, and adapted to be lifted by the knife plate, and having pivoted to its other end a pawl J, adapted to engage the ratchet d, and the gauge K adapted to regulate the traverse of the lever I, substantially as set forth.

No. 28,700. Car Mover.

(*Lever de mise en mouvement des chars*)

Carter B. Dean, Norborne, Mo., U.S., 15th March, 18-8. 5 years.

Claim.—The herein described implement for moving cars, consisting of the lever A, having the gripping portion B at one end thereof, and the hook C projecting from said gripping portion, and thence laterally across the same, so as to bear upon the inner surface of the wheel flange, substantially as described.

No. 28,701. Reversible Car Seat.

(*Siège de char à bascule*)

Oscar R. Lehdorff, Detroit, Mich., U.S., 15th March, 1888. 5 years.

Claim.—1st. In a reversible seat, the combination, with the frame A and the back having arm B pivoted to said frame, of a tension device permanently connected with said arm, and constructed to act as a brake in reversing the seat, substantially as shown and described. 2nd. The combination, with the frame A and the pivotal seat back, having a fixed hinge pin, of the spring-actuated tension device arranged to operate on said hinge pin, and act as a brake in reversing the seat back, substantially as described. 3rd. In a reversible seat, the combination, with the frame A and pivoted seat back having fixed hinge pin and the arm rail, of tension rod secured under the overhanging part of the arm rail, and having crank connections to the fixed hinge pin of the seat back, substantially as and for the purpose specified. 4th. In a reversible seat, the combination of a pivoted seat back having a fixed hinge pin, two spring barrels secured upon opposite sides of the hinge pin, and crank connections between the hinge pin and spring barrels, all arranged to operate as described. 5th. In a reversible car seat, the combination, with the arm rail and the pivoted seat back, of a hinge pin secured to the pivot of the hinge of the seat back, and the two cranks upon opposite sides of said hinge pin, and elastic connections between said crank and arm rails, all arranged and operating substantially in the manner and for the purpose described. 6th. In a reversible car seat back, the combination, with the seat frame, of a back iron journaled to the seat frame and carrying a hinge pin, spring barrels upon opposite sides of the hinge pin, and a disk on the outer end of said hinge pin, and pivotally connected to the tension rods of said spring barrels, substantially as and for the purpose set forth. 7th. In a reversible car seat back, the combination of the seat frame A, shaft D journaled to the frame, and back hanger B secured upon shaft D, said shaft D carrying upon its outer end a disk or double crank E connected by suitable connections, the tension devices upon opposite sides, substantially as described.

No. 28,702. Track Jack. (*Cric de voie de fer*.)

Patriok Larkin, Waseco, Minn., U.S., 15th March, 1888; 5 years.

Claim.—In a track-raising device for railways, the combination, substantially as described, of the fulcrum block, comprising a flat base, parallel standards rising vertically from the base and having their rear notched edges at right angles thereto, the brace rods and handle secured to the upper ends of the standards by a stay bolt, and the lever provided at a distance from its lower end with a fixed fulcrum stud, projecting on other side of the lever, and adapted to engage the notches in the rear edges of the standards, whereby the fulcrum stud of the lever may be shifted to a higher pair of notches without changing the position of the fulcrum block, as described and shown.

No. 28,703. Clock and Watch Dial.

(*Cadran d'horloge et de montre*.)

Jack Singleton, St. Louis, Mo., U.S., 15th March, 1888; 5 years.

Claim.—1st. A dial of a time-piece, having, at or near the periphery, a circular series of numbers running from 1 to 24, inclusive, within said series, an annular space divided into sixty equal spaces, and, within the annular space, numbers in a circular series indicating the minutes in multiples of five. 2nd. A dial of a time-piece, having, at or near the periphery, a circular series of numbers running from 1 to 24, inclusive, within said series, an annular space divided into minute spaces within the annular space numbers in multiples of five, and marks H extending inwardly from the annular space between the numbers last mentioned. 3rd. The combination of a circular series of numbers D, annular space E, series of numbers G and the marks F and H, all substantially as and for the purpose set forth.

No. 28,704. Side Wall Register.

(*Bouche de chaleur*.)

Horace K. Tallmadge, Buffalo, N.Y., U.S., 15th March, 1888; 5 years.

Claim.—1st. The combination of an ornamental register plate, a box adapted to fit in between the walls, a downwardly projecting collar in the bottom of the box and located at an angle to the register plate, a damper and a means for operating it, substantially as and for the purposes described. 2nd. A side wall register consisting of an ornamental wall plate, combined with a box adapted to fit between the walls, and having a curved or inclined back portion, a downwardly projecting collar arranged at right angles to the register plate, a damper connected by a connecting rod to a sliding plate or piece secured in a slideway in the register or wall plate, substantially as described.

No. 28,705. Throwing Arm for Artificial Blackbirds. (*Bras de jet pour merles artificiels*.)

John Bowron, Hamilton, Ont., 15th March, 1888. 5 years.

Claim.—1st. The combination of the spring lever A, with its rigid cam B, the extended arm D, springs G and F, stop E, lever C on its outer end, and the pins J, I, substantially as and for the purpose hereinbefore set forth. 2nd. The combination, with the spring lever A, cam B, arm D and lever C, with their attachments, and the artificial blackbird E, substantially as and for the purpose hereinbefore set forth.

No. 28,706. Lubricating Compound.

(*Composition lubrifiante*.)

David L. McKittrick, Baton Rouge, La., U.S., 15th March, 1889; 5 years.

Claim.—The herein described composition to be used as packing for journal boxes, which consists of crude asbestos powdered plumbago, powdered soapstone, powdered borax and tallow oil, when the same are thoroughly mixed and combined in substantially the proportions specified.

No. 28,707. Stump Extractor. (*Arrache-souche*.)

John Cornelius, Evansville, Ind., U.S., 15th March, 1888; 5 years.

Claim.—1st. The combination, in a stump extractor, of the framing, the boxes D seated in said frame and having lugs d, and the horizontal shaft having bearings in said boxes, substantially as set forth. 2nd. The combination of the main frame, the horizontal shaft, having chain and worm-wheels, the worm meshed with said worm-wheel, the pulley frame N, O, the pulleys supported in said frame, the guide J, and the bracket P mounted on the pulley frame and supporting the guide J, substantially as set forth. 3rd. The combination, in a stump extractor, of the main frame, the boxes D seated therein, and having lugs d, and bearings for the horizontal shaft A, the shaft A having chain wheel H and worm-wheel G, the worm F meshed with worm-wheel G, the pulley frame N, O, the pulleys L, L, the guide J, and the bracket P mounted on the pulley frame and supporting the guide J, substantially as set forth.

No. 28,708. Road Cart. (*Désobligeante*.)

George H. Jowett and Charles W. Jowett, Jackson, Mich., U.S., 15th March, 1888; 5 years.

Claim.—1st. The combination with the shafts and seat of a road cart, of curved seat bars pivotally secured at their forward ends to the cross bar, and supporting with their rear ends the rear end of the seat, a spring bar connecting the seat bars, a semi-elliptical spring centrally secured to the spring bar, and hangers for suspending the ends of said spring from the bent portions of the shafts, substantially as described. 2nd. In a road cart, the combination, with the shafts and the cross-bar connecting same, of curved seat bars pivotally connected at their forward ends to said cross bar, and support-

ing with their rear ends the rear ends of the seat, braces between the seat bar and the forward end of the seat, a spring bar connecting the seat bars, a semi-elliptical spring secured to the centre of the spring bar, pivotally secured hangers suspending the ends of said spring from the bent rear ends of the shafts, and the foot-rest having its supporting bars secured at their forward ends to the cross bar, and at their rear ends to a point at the junction of the seat bars and spring bars, substantially as described. 3rd. In a road cart, the combination, with the semi-elliptical seat spring, of hangers secured at their upper ends by swivel connection at the bent rear ends of the shafts, and supporting with their lower bifurcated ends the ends of the seat spring, substantially as described. 4th. In a road cart, the combination, with the semi-elliptical seat spring E, of the pivot pin *b* secured to the rear end of the shafts, and the hanger G having the flaring eye *c* at its upper end, and the straight and curved bifurcations *e* lower end, substantially as described.

No. 28,709. Pay Device. (Appareil de payeur.)

David W. Bundy, Toronto, Ont., 15th March, 1888; 5 years.

Claim.—1st. A pay device consisting of a tray provided with series of pockets, each bearing both the name and the numerical designation of an employee, and a number of money-boxes adapted for reception in the pockets, and each bearing the number of its respective pocket, substantially as described. 2nd. A pay device consisting of a tray provided with series of pockets, and a number of marked money-boxes provided with laterally opening lids, adapted to be received endwise in the pockets and to fit closely between, and be held closed by, the walls of the same, substantially as described. 3rd. In a pay device, the combination, with a tray having brackets for the reception of pay boxes or receptacles, of adjustable brackets on the ends of the tray adapted to fold within the limits of the tray, or to project therefrom, so as to support the tray in an inclined position, and means for locking the brackets in position, substantially as described. 4th. A money-box provided with a hinged lid, and having like characters formed on the outside of both ends, and on the interior of the lid or box, as and for the purpose specified. 5th. In a pay device, a tray provided with series of pockets, separated by partitions, the partition at the side of each pocket bearing a numeral, and adjacent thereto a label having a name marked thereon, substantially as described. 6th. A pay device consisting of a tray formed with series of pockets, a number of marked money-boxes adapted for reception in, but to project from the mouth of, the pockets, and an entirely removable cover arranged to set down over the boxes upon the tray and to hold the boxes in place, substantially as described.

No. 28,710. Kitchen Cabinet. (Armoire de cuisine.)

(Armoire de cuisine.)

John G. Sahahfor, Clay, Ind., U.S., 15th March, 1888; 5 years.

Claim.—The kitchen cabinet, comprising the case provided with an extension cupboard, having centrally hung or pivoted safes, each constructed with semicircular sides, and semicircular back extending to within a short distance of the rear upper part of the front of the safe, providing thereby the filing and discharging opening, each safe having movement, whereby it is adapted to be revolved, so as to bring its upper open end outward and downward to and below a horizontal position, substantially as and for the purpose set forth.

No. 28,711. Composition for Application to the Surface of Printers's Inking Rollers. (Composition pour appliquer aux rouleaux des imprimeurs.)

Adam Worthage, St. Louis, Mo., U.S., 15th March, 1888; 5 years.

Claim.—1st. The composition consisting of water, alum and poke- or cocum-berry coloring, in substantially the proportions set forth. 2nd. A composition for substantially the purpose described, consisting of alum, poke or cocum-berry juice and molasses, in substantially the proportions set forth.

No. 28,712. Safety Razor. (Rasoir de sûreté.)

Albert S. Alvo, St. Louis, Mo., U.S., 15th March, 1888; 5 years.

Claim.—1st. A safety razor having a guard-roller provided with a spiral rib, substantially as set forth. 2nd. The combination of a razor blade, and a plate to which the blade is clamped, said plate having hooks forming guards for the corners of the blade, substantially as set forth. 3rd. The combination of the plate A, having plates B and C hinged to it the plate B made of a tongue *b*, and part with fingers *b2, b3, b4*, and the plate C having hooks *c* and hinges *a2*, the hooks engaging the edge of the blade. 4th. The combination of the plate A, a razor blade D, and a plate C connected to the plate A by hinges *a2*, formed by projections on the plates A and C, and the plates C having hooks *c*, substantially as and for the purpose set forth. 5th. In a safety razor, a device for holding the blade while sharpening it, consisting of two members, one of which serves as the handle, and the other of which acts to receive the blade, the latter telescoping the former, substantially as set forth. 6th. In a safety razor, a device for holding the blade while being sharpened, consisting of a handle part slotted on its back, a holder part telescoping the handle part, and a moving pin secured to the holder part and extending through the slot in the hand part, substantially as shown and described.

No. 28,713. Process of Manufacturing Books. (Procédé de fabrication des livres.)

James M. Beers, Brooklyn, N.Y., U.S., 15th March, 1888; 5 years.

Claim.—1st. In the manufacture of books, the method of affixing a suitable identifying mark, which consists in printing, stamping, cutting, or otherwise suitably affixing said identifying mark upon, or to the inner part of the case, lining or back of the book, and covering

and protecting the same by securely and permanently applying thereto the outer part of the book, whereby the said identifying mark is concealed from view, and can be removed or changed only by destroying the book, substantially as described. 2nd. The improved method of manufacturing books, which consists in printing, stamping, cutting, or otherwise suitably affixing upon, or to the edges or folds of the signatures of the book, a suitable identifying mark, and securely and permanently applying thereto the lining of the back of the book, and covering and protecting the mark by said book lining, whereby the said identifying mark can be removed or changed only by destroying the book, and whereby the book can be identified, substantially as shown and described.

No. 28,714. Process of, and Apparatus for Overturning Stones. (Procédé d'abat-tage des roches et appareil à cet effet.)

Léopold Plom, Retinno, et Julien d'Andrimont, Liège, Belgique, 15th March, 1888; 5 years.

Résumé.—1o. Le procédé d'abattage de la houille, de la pierre ou de minerais quelconques, soit pour le percement de galeries, tunnels ou puits de toute nature, et consistant à creuser, vers l'extrémité d'un trou de mine, une cavité de section plus grande que celle du trou de mine et destinée à recevoir une matière explosive quelconque. 2o. L'appareil décrit pour forer une cavité vers l'extrémité d'un trou de mine et consistant essentiellement en un tube métallique D, portant les perforations S, V et G, et à l'intérieur duquel se moue une tige B, portant à une extrémité une partie filotée, et un corou mobile F ajusté sur le tube D. Pérou et la tige filotée ayant pour objet de déployer les attelles ou doles reformer. 3o. En combinaison avec l'outil revendu en 2, les perforations S, V et G, du tube D et une tige hélicoïdale B, servant à conduire à l'extérieur les poussières produites par les attelles pendant leur travail. 4o. La méthode d'inflammation de la charge consistant à disposer la mèche dans un bouchon en bois N, de manière à ce qu'elle aboutisse à un endroit correspondant au milieu de la charge d'explosif, ce bouchon ayant une longueur connue et venant buter contre le fond du trou de mine.

No. 28,715. Type Writing Machine. (Graphotype.)

(Graphotype.)

Emory M. Hamilton and Louis Goldsmith, New York, N. Y., U. S., 16th March, 1888; 5 years.

Claim.—1st. In a type writing machine, the combination of a type lever A adapted to carry at its free end a printing type, a fulcrum *b* on which said lever may slide, a rocking arm hinged to said lever and rocking on a shaft *a3*, with means, substantially as described, for rocking said shaft, as and for the purpose specified. 2nd. In a type writing machine, the combination, with the series of type levers A, their rocking arms *a1* and rocking shafts *a1*, of the disk B having radial slots *b4*, the groove *b5* intersecting said slots, the tapped apertures *b7* intermediate said slots, and the flanged head screws *b8* seated in said apertures, whereby said screw heads reach over the adjacent ends of two of said rock shafts, as and for the purpose specified. 3rd. In a type writing machine, the combination of the annular inking pad D and its enclosing case, consisting of the flanged annulus D1, the annular disk D2 and the screw cap D3, as and for the purpose specified. 4th. In a type writing machine, the paper feed rollers E2 and E3, the latter being mounted to revolve upon a spring axial rod, and the former being journaled at its ends in slotted bearings provided with set screws to adjust and press the rollers together with a spring pressure, as and for the purpose specified. 5th. In a type writing machine, the combination of the roller E2 journaled in the described frame, the ratchet wheel *n1* on the roller shaft, the lever *n* loose on said shaft, carrying a pawl *n3* adapted to engage said ratchet wheel, and having the motion limiting end or nose *n5*, together with the motion limiting stop-pin *n6*, as and for the purpose described. 6th. In a type writing machine, the combination, with the frame E1 of the paper carriage, of a separate frame carrying the feed rollers hinged or pivoted to said frame E1, as described, so that, when said frame is swung upward on its hinges, it will be turned towards the front of the machine, as and for the purpose specified. 7th. In a type writing machine, the combination, with the series of levers A, of the disk B having the upwardly projecting annular and vertically slotted flanges *b1, b2*, and the annular rib *b*, together with the annulus B2 provided with the annular rib *b1* in opposition to said rib *b*, as and for the purpose specified. 8th. In a type writing machine, the combination, with the series of levers A, of the disk B having the upwardly projecting annular and vertically slotted flanges *b1* and *b2*, and the annular rib *b* intermediate said flanges, as and for the purpose described. 9th. In a type-writing machine, the combinations with the paper carriage actuating mechanism, and the series of lever A, a severally actuated by the series levers C through the mechanism described, of a lever F1, arranged as described, to be actuated by the movement of each and every of the levers C, as and for the purpose set forth. 10th. In a type writing machine, the combination, with the paper carriage actuating mechanism, and the series of levers A, a severally actuated, as specified, by the series of levers C, through the series of levers *c1*, of the post F and its flanged collar *f*, and the lever F1 arranged to be actuated by the several levers *c1*, as and for the purpose specified. 11th. In a type writing machine having the described paper carriage, the combination of a toothed bar H on said carriage, the lever *h1*, having arm *h2*, to which is pivoted the dog *h* to engage said bar, the vertically reciprocating post F, having flanged collar *f*, the lever F1, one arm of which engages said lever *h2*, together with the series of levers *c1*, the inner arms *f1* of which engage said collar *f* and are of different lengths, so that, by an equal movement of said levers *c1*, the said dog *h* will be shifted one, two, three, or more, teeth, on said feed bar H, in proportion to the lengths respectively of the ends of said arms *f1*, of said levers *c1*, as and for the purpose described. 12th. In a type writing machine, the combination, with a central reciprocating post F, having a flanged collar *f*, of the lever F1, one arm of which engages said post and the series of levers *c1*, the extromities *p, p1, p2* respectively of the arms *f1* of which, in engagement with said collar *f* are of different lengths, whereby an equal movement of the several levers *c1* of the series will

reciprocate said post F, and vibrato said lever F¹ different distances, as and for the purpose specified. 13th. In a type writing machine, the combination, with the series of levers C¹, fulcrumed by the curved projections C² on the inwardly turned annulus C³, of the annular flange C⁴, the post F and its flange F¹, the levers C, rods C¹ and keys C², as and for the purpose specified. 14th. In a type writing machine, the series of levers C¹ fulcrumed on and engaging the annulus C², and having as integral parts of said levers, the toothed segments C³, in combination with the rocking pinions C⁴, rocking arms C⁵, levers A, levers C, rods C¹ and keys C², as and for the purpose specified. 15th. In a type writing machine, the combination, with the lever F¹ and vibrating lever H¹, carrying dog H, and having the arm H², of the set screw H³ and the guard H⁴, as and for the purpose specified.

No. 28,716. Refrigerator Packing Box.

(Boîte glacière d'empaquetage.)

Philip Hohmeyer, Jacob Ball and John Nichol, Waterloo, Ont., 16th March, 1888; 5 years.

Claim.—1st. A refrigerator packing box composed of a cooling chamber A, having an ice-chamber formed in its top C, substantially as and for the purpose specified. 2nd. An ice chamber or top C, hinged at a to the chamber A, and having an opening H protected by walls b, in combination with a perforated shield I and flanges d, arranged substantially as and for the purpose specified. 3rd. An ice chamber or top C, hinged at a to the chamber A, and having a hole or holes J, with a pipe or pipes K projecting downwardly from the said holes, in combination with the flexible pipe or pipes M, arranged to connect the pipe or pipes K to the pipe or pipes L, substantially as and for the purpose specified. 4th. An ice-chamber or top C, hinged at a to the chamber A, and having a hole or holes J, with a pipe or pipes K projecting downwardly from the said holes, a flexible pipe or pipes M arranged to connect the pipe or pipes K to the pipe or pipes L, and a hinged lid D locked by the plate E and screw-bolt F, in combination with an opening H formed in the bottom of the chamber C and protected by the shield I, walls b and flanges d, substantially as and for the purpose specified.

No. 28,717. Electric Railway Signal.

(Signal électrique de chemin de fer.)

Charles D. Tisdale, Boston, Mass., U.S., 16th March, 1888; 5 years.

Claim.—1st. The combination, in electric railway signalling apparatus, of a track circuit, including the relay magnet K, battery B, conductors t, u, v, the rail sections J, I and the line G, line battery H, signal magnet h, back contact point q, armature lever r placed within the field of the relay magnet K, and the wires grounding the line G at opposite ends, substantially as herein shown and described. 2nd. In electric railway signalling apparatus, the combination, with the track formed of rails I, I¹, the rail I being divided into sections t, t¹, k insulated from each other, the ground wires p, x connected with the sections with the relay magnet K, battery B, and conductors t, u, v, forming with the rail sections J, I, and the wheels and axles of the train, circuit for the battery B, of the line G, provided with the line battery H, the signal magnets h inserted in the line, the relay J conductor m communicating between the relay and the track rail I, the contact point l connected with the conductor m, the ground wire q and armature lever r, substantially as herein shown and described. 3rd. In electric railway signalling apparatus, the combination, with the line G provided with the battery H and having at one end the contact point q, and at the opposite end a relay magnet J, contact point l and conductor m connected with the track rail I, of the armature lever r connected with the ground by the wire p, and arranged to ground the line wire by bringing the armature lever r against the iron contact l, the relay magnet K, its armature r arranged to fall back upon the contact point q, when released by the relay magnet K, the ground wire x, the battery B, conductors t, u, v, and the track section formed of the rail section I, and the rail section I formed of the parts i, j, k the parts x and k being grounded, substantially as herein shown and described. 4th. In electric railway signalling apparatus, the combination, with the line G, of the magnet h, armature q, straight bar semaphore E, provided with the drum d, the cord c connecting the drum d and the armature q, and the casing formed of the annular frame A, and the glass sides D exposing the entire length of the semaphore to view, the magnet being arranged wholly without the annular frame to furnish a clear open field for the semaphore, substantially as herein shown and described. 5th. In railway signalling apparatus, the semaphore casing formed of the annular frame A and glass sides D, the straight bar semaphore E pivoted in the casing between the glass sides and wholly exposed to view, and means for turning the semaphore on its pivot, arranged exteriorly to the semaphore casing, substantially as herein shown and described. 6th. The combination, in electric railway signalling apparatus, of the semaphore case formed of the annular frame A, the glass sides D, the straight bar semaphore E pivoted in the case between the glass sides, carrying in one end thereof a transparent colored disk c, and the lantern F secured to one side of the semaphore case opposite the path of the colored disk c, substantially as herein shown and described. 7th. In electric railway signalling apparatus, the combination of the annular frame A, provided with the socket B and chamber f, and outside of the annular frame A, and having glass sides D, the signalling magnet h and armature q placed in the chamber f, the straight bar semaphore E turning on the pivot a, the drum d and the cord c connecting the drum with the armature q, the coloured disk c and the lantern F secured to one side of the semaphore case, substantially as herein shown and described.

No. 28,718. Harrow. (Herse.)

Isaac McNaughton, Eureka, N.S., 16th March, 1888; 5 years.

Claim.—1st. The adjustable runner G, attached to the front and rear bars of the harrow section, in line with the draft of the harrow, as set forth. 2nd. The combination, with the front and rear bars of a harrow section, of the blocks E, E¹ bolted thereto, a runner G, having upturned ends adjustable in said blocks, and screws or fasten-

ings F to hold said runner adjustably, as set forth. 3rd. The runner G, constructed of end and middle sections secured together at the angle or turn by bolts H, as set forth. 4th. The adjustable runner G, provided with a reinforcing bar I, bolted longitudinally to the upper side, as set forth. 5th. The diagonal brace bar D, connecting the outer intersecting bars A and B of the harrow section, as set forth.

No. 28,719. Composition for Plastering and Decorating the Interior and Exterior of Walls with a Material known as "Carton-Pierre."

(Composition pour enduire et décorer les murs à l'intérieur et à l'extérieur, dite "Carton-Pierre.")

Alfred J. Pigeon, Montreal, Que., 16th March, 1888; 5 years.

Claim.—A compound composed of glue, molasses, bichromate of potassium or chromo alum, or tannic acid, glycerine, wood, straw, or other fibrous pulp, clay, whitening and raw linseed oil, substantially in the proportions specified and for the purposes herein set forth.

No. 28,720. Sleigh. (Traineau.)

Edward J. Cox and Dwight E. Forton, Evert, Mich., U.S., 16th March, 1888; 5 years.

Claim.—The combination of the runners having the blocks, the runner castings formed with the side flanges, the apertures and the rounded upper faces, the single beam, formed at each end with vertical oval openings, the beam castings the rounded lower faces, the bolt holes and the oval openings, the pins having shouldered upper ends, the raves or braces and the loose clips, substantially as set forth.

No. 28,721. Snow Plough. (Charrue à neige.)

James O. Stackhouse, St. John, N.B. 17th March, 1888; 5 years.

Claim.—A snow plough having a horizontal cutting edge, a nose having the dividing edge vertical thereto and segmentally curved inwardly, the top having divergent straight edges, and the sides vertically hollowed out and downwardly inclined to meet in the curvature of the nose and cutting edge, substantially as set forth.

No. 28,722. Churn. (Baratte.)

Samuel D. Palmer, Rockford, Ill., U.S., 17th March, 1888; 5 years.

Claim.—1st. The combination, with a churn having baits pivoted thereto, of a removable head, and a cam secured to the said head to engage the free portions of the baits, substantially as set forth. 2nd. The combination, with a churn provided with a ring head fixed thereto, the said ring head having ears rising therefrom, of baits pivoted to the said ears, a removable head, and a cam secured to the removable head to engage the free portion of the baits, substantially as set forth. 3rd. In a churn-head in combination with baits, an oscillating cam fastening having independent inclines, the upper portion of the lower end portions of said inclines forming rests to receive the baits, substantially as set forth. 4th. In combination with a churn provided with baits, an oscillating cam fastening for the baits, the said cam-fastening provided with a transverse vertical web forming a hand-hold, substantially as set forth.

No. 28,723. Churn. (Baratte.)

Francois Trudo, Stoco, Ont., 17th March, 1888; 5 years.

Claim.—The combination, in a churn, of the box A, having the removable cover C, with a reel set on a horizontal shaft, and composed of the crosses E, finger bars F and fingers G screwed into said finger bars, and having that portion of the finger which is between the bar and the reel shaft round, and the part on the outer side of the bar square in the cross section, substantially as shown and described and for the purpose set forth.

No. 28,724. Removable Jaw for Pipe and Bolt Wrenches. (Mâchoire mobile de clé à tarauder les tuyaux et les écrous.)

Henry W. Atwater, East Orange, N. J., U.S., 17th March, 1888; 5 years.

Claim.—1st. The removable serrated jaw for bar wrenches, constructed as herein shown and described, with the tongue e¹ projected from its rear end at one side, and the lug e² at a right angle with the tongue forming the socket e, open at one side e¹, as and for the purpose set forth. 2nd. The combination, with the removable jaw, having formed therewith a socket, open on one side, of the means, substantially as described, for holding the jaw in position upon the shank.

No. 28,725. Button-Hole Stitching Machine.

(Machine à faire les boutonnières.)

James H. Reed, Lynn, Mass., U.S., 17th March, 1888; 5 years.

Claim.—1st. In a button-hole stitching machine, the combination, with stitching mechanism, of a clamp-plate and clamp, a feeding device for feeding the clamp-plate, and a device for communicating an intermittent oscillating or vibrating movement to the clamp-plate automatically, and at the end of the feed movement and in continuance thereof, all substantially as described. 2nd. The combination, in a button-hole stitching machine, of the stitch-forming device, the clamp-plate carrying material, clamping mechanism, feeding devices for feeding the clamp-plate, a tripping stop or block adapted to be operated or moved by the clamp-plate, and devices operated by said tripping stop or block for disconnecting the feed operating devices and stopping the feed, substantially as described. 3rd. In a button-

hole stitching machine, the combination of a clamp-plate, having a shoulder or recess adapted to be moved or brought into operative contact with a block, post, stud, or other intermittently reciprocated part, all substantially as described. 4th. The combination of a plate supporting work, clamping devices, a feeding device for moving said plate relatively to the stitch-forming mechanism, and an intermittently operating stud, post, or block adapted to engage the plate and to move the same to cause the material to be transferred or moved back and forth under the needle to form a bar or stay at the end of the button-hole, all substantially as described. 5th. The combination of a movable plate supporting the work-supporting devices, the throat plate, a feeding device for feeding the clamping plate to present the work to the sewing mechanism, the throat plate of the machine, the spring-held roll adapted to bear against the edge of the clamping plate, and the intermittently moving stud, pin, or post, or other moving part, arranged to engage the clamping plate and move it automatically upon the end of its feed movement, all substantially as described. 6th. The combination, in a machine for stitching button-holes, of a movable plate having a guiding pin, the said pin, work-holding, or clamping devices carried by said feeding devices, for moving and feeding said plate to present the work to the sewing mechanism, the feed mechanism and guide slot adapted to hold the end of the said pin at the end of the feed movement of the plate, and devices for operating or moving the said clamping plate laterally under the needle, and upon the said pin as a centre, all substantially as described. 7th. In a button-hole stitching machine, the movable post, block, or arm, adapted to be moved by the contact of the clamping plate therewith, and feeding devices for feeding said clamp-plate, and intermediate devices operated by said block, arm or post to disengage the devices operating the said feeding mechanism, and thereby automatically stopping the feed, all substantially as described. 8th. The combination of a block, post, or arm, a latch connected therewith controlling the operative position of the device for oscillating or reciprocating the clamp-plate, with the said clamp-plate, all substantially as described. 9th. The combination, in a machine for stitching button-holes, of the tripping block, post, or arm operated by the contact of the clamp-plate therewith, an intermittently reciprocating clamp-plate, post, spindle, or block, and connecting mechanism, whereby, upon the movement of the tripping block, post, or arm, the reciprocating clamping plate, post, stud, or block is brought into operative position, and upon the vertical movement of said reciprocating clamping plate, post, stud, spindle, the tripping block, post or arm is brought into position to be again moved by the clamping plate, all substantially as described. 10th. The combination of the clamping plate, holding or supporting the work-clamping devices, devices for moving the same to present the work to the stitching mechanism, and an intermittently reciprocating post, stud, or block adapted to engage the clamp-plate and move it, means for moving said post, block, or stud vertically in its support, a spring for moving it in one direction, and a latch for locking it down against the spring pressure, all substantially as described. 11th. The combination, in a button-hole stitching machine, of an intermittently reciprocating block, post, or stud, having a vertical movement in its carrier, or support, a spring for moving it upward in relation thereto, and a latch for holding it in its lowest position in relation to the spring, all substantially as described. 12th. The combination of a clamping plate, movable as described, and having the inclined surface *c*, with the vertically movable intermittently reciprocating stud, block or post *E*, substantially as described. 13th. The combination of the clamp-plate, movable as described, having the inclined surface, with the vertically movable intermittently reciprocated block, stud, or post, and the latch *d*, substantially as described. 14th. The combination of the slide bar having a block provided with a recess or hole, the pin or post *E* having the section *e* which enters said recess or hole, and the latch block *c*, the spring *e* and the automatic latch *d*, all substantially as described. 15th. The combination of the slide plate or blocks supporting the pin, post, or stud *E*, the cam *e*₁, the lever *e*₂ and the connecting link *e*₃, substantially as described. 16th. The combination of the tripping block *D*, the slide plate *d*, the reciprocating block carrying the vertically movable pin or post *E*, and the latch *d*, substantially as described. 17th. The combination of the block *D*, the slide block or bar *d*, the arm *d*₁, and the covering plate or shield *d*₂, adapted upon the movement of the slide bar to be brought over the feed ratchet wheel, and to form a surface upon which the head may move, substantially as described. 18th. The combination, in a machine for stitching button-holes, of a block or stop *D*, and devices for intermittently reciprocating the clamp-plate adapted to be moved into operative position upon the release of a latch, said latch connected with said block or stop, a feed disconnecting device for disconnecting the feed operating mechanism from the feed roll or wheel also connected with said block, whereby, upon the movement of said block, the operation of feeding is discontinued, and the clamp-plate oscillating device automatically brought into operation, all substantially as described. 19th. The combination, in a button-hole stitching machine, of the block or stop *D*, and means for adjusting it, substantially as described. 20th. The combination of an adjustable back-stop, a pointer *f* and the scale *f*, all substantially as described. 21st. The combination of a clamp-plate slot *b*, with the adjustable front stop *G*, all substantially as described. 22nd. The combination of the clamping plate slot *b*, the stop *G* and the adjusting screw *g*, substantially as described. 23rd. The combination of the front stop *G*, the indicator *g*₁ and scale *g*₂, substantially as described. 24th. The combination of the tripping block *D*, and a latching device for holding it locked back during the movement of the button-hole barring devices, substantially as described. 25th. In a machine for stitching button-holes, the combination of stitching devices, a movable plate supporting the work clamping and holding and presenting devices, and feeding mechanism for automatically moving the plate to present the work to the stitching mechanism, a tripping device for tripping the feed operating devices, a device for engaging the clamp-plate and intermittently moving the same in the operation of barring or staying the button hole, all combined and arranged so that the stitching of the sides and eye is followed by the immediate automatic forming or stitching of the bar or stay, whereby the entire stitched and barred or stayed button-hole is made in one continuous operation of the machine, all substantially as described. 26th. The combination of the throat plate having the deep

recess *h*, and the clamp-plate having a slot sufficiently wide to permit the reciprocating or oscillating movement of the plate in the recess in relation to the throat, during the operation of barring, as described, all substantially as set forth. 27th. The combination of the throat plate having the deep recess *h*, the clamp-plate having the recess or slot wide enough to permit the oscillating or reciprocating movement of the clamp-plate in barring, and the spring-held roller for bearing against the edge of the clamp-plate, and holding the edge *h*₂ of the said recess or slot in contact with the edge of the throat plate within the recess, all substantially as described.

No. 28,726. Apparatus for the Prevention of Smoke. (*Appareil pour détourner la fumée*)

George Ineson, Montreal, Que., 17th March, 1888; 5 years.

Claim.—1st. In combination with a furnace chamber, and in combination, a shaft connected with hinges of fire door and turning with it, a crank on upper end of such shaft, operating when turned to raise by contact with a bent dog secured thereto, the outer end of a platform hung centrally from a stud secured to boiler face, and a link connecting outer end of said platform with devices operating draft door, as and for the purposes set forth. 2nd. The combination, with a fire-door, of a shaft attached to, and turning with, the hinges, and having a crank at its upper end, a pendent platform with one bent end, bent dogs projecting downward from same, vessels for holding liquid carried on ends of such platform, these vessels being connected by one oblique and one horizontal pipe, the horizontal pipe being provided with a valve, the whole substantially as herein set forth and for the purposes described.

No 28,727. Ball Turning Lathe.

(*Tour à tourner les boules*)

Tronson Draper, Petrolia, Ont., 19th March, 1888; 5 years.

Claim.—1st. In a ball turning lathe, the combination, with a leather-covered face-plate, of a stretcher for stretching the leather cover on the face-plate, substantially as set forth. 2nd. In a ball turning lathe, a face-plate consisting of a disc adapted to be screwed to the lathe-spindle, a leather covering secured to the rim of said disc, a disc of rubber or other elastic material placed at the back of said leather cover, and a stretcher acting against the rear face of the rubber backing to force it against the leather, substantially as and for the purpose set forth. 3rd. In a ball turning lathe, the combination, with a metallic disc adapted to be screwed to the spindle of the lathe, of a leather cover secured to the rim of said metallic disc, a disc of rubber or other elastic material used as a backing at the rear of said leather cover, a disc placed between the metallic disc and said elastic disc, and set-screws screwing in the metallic disc against the disc, placed between the metallic disc and elastic disc so as to stretch or slacken the leather cover, substantially as shown and described. 4th. In a ball turning lathe, the combination, with a leather-covered face-plate, of a leather wheel held in contact with the said face-plate and rotated by the latter, a second leather wheel having a concave rim and held on the same spindle as said wheel in contact with the face-plate, a cup-holder and a cup supported at the upper end of said cup-holder and having a cutting edge, substantially as shown and described. 5th. In a ball turning lathe, the combination, with leather covered face-plate, of a leather wheel held in contact with said face-plate and rotated by the latter, a leather wheel having a concave surface and held on the same spindle as said wheel in contact with the face-plate, a cup-holder, a cup held at the upper end of said holder, and a cutting tool held in said cup and projecting with its cutting edge slightly above said cup, substantially as shown and described. 6th. In a ball turning lathe, the combination, with a cup-holder, of a cup held at the upper end of said holder, a nut screwing on said holder, and a cutting tool held in the recess in said holder and passing through a slot in said cup, and also being moved up and down by said nut screwing on said holder, substantially as shown and described. 7th. In a ball turning lathe, the combination, with a cup-holder, of a cup held at the upper end of said holder, a nut screwing on said holder, and a cutting tool held in a recess in said holder and passing through a slot in said cup, and also being moved up and down by said nut screwing on said holder, and means for fastening said tool in place on said cup, as set forth. 8th. In a ball turning lathe, the combination, with a leather covered face-plate, of a wheel held in frictional contact with said face-plate, a spindle carrying said wheel, a holder in which said spindle rotates, and means, substantially as described, for raising and lowering said spindle, as set forth. 9th. In a ball turning lathe, the combination, with a leather covered face-plate, of a wheel held in frictional contact with said face-plate, a spindle carrying said wheel, a spindle-holder in which said spindle rotates, a screw-rod secured to said spindle-holder, and a horizontally adjustable carriage in which screw-rod and screw-rod, substantially as shown and described. 10th. In a ball turning lathe, a standard, a lathe spindle supported in a bearing on said standard, and a leather covered face-plate held on said lathe spindle, in combination with a wheel held in frictional contact with the face of said face-plate, a spindle carrying said wheel, a holder in which said spindle turns, a screw-rod extending from said holder, a carriage in which said screw-rod screws, and an arm held adjustably on said standard and supporting said carriage, substantially as shown and described. 11th. In a ball turning lathe, a standard, a spindle supported in a bearing on said standard, and a leather covered face-plate held on said lathe spindle, in combination with a wheel held in frictional contact with the face of said face-plate, a spindle carrying said wheel, a holder in which said spindle turns, a screw-rod extending from said holder, a carriage in which said screw-rod screws, an arm held adjustably on said standard and supporting said carriage, and means, substantially as described, for moving said carriage forward and backward on said arm, as set forth. 12th. In a ball turning lathe, a standard, a lathe spindle supported in a bearing on said standard, and a leather covered face-plate held on said lathe spindle, in combination with a wheel held in frictional contact with the face of said face-plate, a spindle carrying said wheel, a holder in which said

spindle turns, a screw-rod extending from said holder, a carriage in which said screw-rod screws, an arm held adjustably on said standard and supporting said carriage, a screw-rod screwing in said carriage and held in suitable bearings on said arm, and a wheel fastened on said screw-rod for turning the same, substantially as shown and described. 13th. In a ball turning lathe, a base, a standard supported on said base, a bearing formed on said standard, a lathe-spindle held in said bearing in an angular position, and a leather covered face-plate held on said spindle, in combination with a wheel held in frictional contact with the face of said face-plate, a spindle supporting said wheel, a leather wheel held on said spindle and having a concave rim, a vertically adjustable holder supporting said spindle, a carriage supporting said holder and having a sidewise motion, an arm supporting said carriage and held adjustably on said standard, a cup-holder held in forks secured to said arm, cups held on the upper end of said holder, and means, substantially as described, for raising said wheel and moving it sidewise, as set forth. 14th. In a ball turning lathe, the combination of a cushioned leather covered face-plate, and a spindle carrying the said face-plate, and the ball to be turned with a pair of tongs having steel cups, substantially as shown and described.

No. 28,728. Sulky Plough. (*Charrue à siège.*)

Thomas Marshall, Hamilton, Ont., 19th March, 1888; 5 years.

Claim.—1st. In a sulky plough, the combination, with a beam, of a frame constructed as shown, the vertical portion being attached to the landside, and the opposite end to the main wheel, substantially as and for the purpose specified. 2nd. In a sulky plough, in combination with a plough-beam and plough, of the short brace and axle K, with shoulder e attaching the frame G and mould-board B, substantially as and for the purpose specified. 3rd. In a sulky plough, in combination with plough-beam and plough, of a tongue-plate M and tongue hinged to the short axle K, which secures the frame to the mould-board, substantially as and for the purpose specified. 4th. In a sulky plough, in combination with the plough-beam and frame, of the combined brace and foot-rest O connecting them, substantially as and for the purpose specified. 5th. In a sulky plough, in combination with the frame G and tongue N, of the brace P, hinged to the former and secured to the latter, substantially as and for the purpose specified. 6th. In a sulky plough, in combination with a plough-beam and plough, of the land gauge-wheel S, constructed solid of metal plate and having an annular flange turned on its outer circumference, substantially as and for the purpose specified.

No. 28,729. Boiler Tube Cleaner.

(*Nettoyeur des tubes de chaudières.*)

Herbert L. Currier, Albert H. Breed and Frank B. Graves, Lynn, Mass., U.S., 20th March, 1888; 5 years.

Claim.—1st. In a device of the character described the pipe *d* having the branch pipe *y*, in combination with the bulb *D* provided with the branch pipe *g*, studs *v* and ring *h* the pipe *d* being inserted in the tube *D*, substantially as set forth. 2nd. In a device of the character described, the bulb *D* provided with the pipe *r* for admitting sand thereto, the triangular studs *g* disposed at the mouth of said bulb, and the ring or collar *h* secured to said studs, in combination with the pipe *d*, valve *z*, branch pipe *y* and handle *m*, the pipe *d* being inserted in the bulb *D*, substantially as specified. 3rd. In a device for cleaning boiler tubes, the combination of the following instrumentalities, to wit: a tubular body provided with a branch pipe for admitting steam thereto, a valve for closing said steam pipe, a bulb secured to said body and having a branch pipe for admitting sand thereto, and a guide or guides secured to said bulb, substantially as set forth. 4th. In a device for cleaning boiler tubes, the combination of the following instrumentalities, to wit: a tubular body provided with a branch pipe for admitting steam thereto, a valve for closing said steam pipe, a bulb secured to said body and having a branch pipe for admitting sand thereto, triangular-shaped radially disposed guides or studs secured to said bulb, and an annular collar or ring secured to said studs, so as to leave an opening for the admission of air around the mouth of the bulb when the guides are inserted in the tube, substantially as specified.

No. 28,730. Carriage Curtain Fastener.

(*Monture de store de voiture.*)

The Star Manufacturing Company, (assignee of Andrew J. Lytle, Hillsborough, Ohio, U.S., 20th March, 1888; 5 years.

Claim.—1st. A button for a curtain fastener, consisting of the shaft *a*, provided with spring-seat *b* and hole *r*, the pin *d* secured in said hole, the spring *s* and the cap *c*, provided with the countersunk shank, the notches *p* and the flattened arc. 2nd. In a curtain fastener, the combination of a plate on one side of the curtain, provided with two rows of tongues stamped thereon, two plates upon the other side to be held in place by said tongues, and two angular rubber rings upon each side of the curtain and adapted to fit between said plates and the curtain.

No. 28,731. Lamp. (*Lampe.*)

Peter English, Galt, Ont., 21st March, 1888; 5 years.

Claim.—1st. In a lamp a superheating chamber formed of upright bars *F* in combination with a plate *G* for the purpose specified. 2nd. In a lamp, a serrated base *E* which breaks the connection between the superheating chamber and the inside flue or wick tube, and allows the air to pass between the base and the flue, to prevent the burner heating as set forth. 3rd. In a lamp, the bars *F* and plate *G* forming a superheating chamber in combination with a base *E*, for the purposes set forth. 4th. In an argand lamp, the chimney *D* formed with the contraction *d*, substantially as shown and described and for the purpose specified. 5th. In a lamp, the chimney *D* formed with the contraction *d*, in combination with the wick tubes *B*, *B*, perforated ring *C*, wick *H*, reservoir *A*, upright bars *F*, plate *G* and serrated base *E*, substantially as shown and described and for the purpose specified.

No. 28,732. Flower Pot. (*Pot à fleurs.*)

George A. Burrough, Providence, R.I., U.S., 21st March, 1888; 5 years.

Claim.—1st. The combination of a flower pot having an inner shoulder, air ducts near its lower end, and a detachable bottom, with an impervious saucer having a central tube or air duct, substantially as described. 2nd. The combination of a flower pot having an inner shoulder, air ducts and a detachable bottom, with an impervious saucer having a central tube or air duct, and radial grooves on its under side, substantially as described. 3rd. The combination of a flower pot having an inner shoulder, air ducts and an elevated detachable bottom of porous material, glazed or made impervious on its underside, with a saucer having a central air duct, substantially as described. 4th. The combination of a flower pot having an inner shoulder, air ducts and a detachable bottom with a saucer and porous pieces *M*, substantially as described. 5th. The combination of a flower pot having an inner shoulder, air ducts and a detachable bottom, with a saucer, porous pieces *M*, *n*, *o*, *p*, and a standard *K*, substantially as described. 6th. The combination of a flower pot having an inner shoulder, air ducts, porous lining attached or movable, and a detached bottom with a saucer having a central tube or air duct, and a standard *K*, substantially as described and for the purpose set forth.

No. 28,733. Oil Can. (*Bidon à huile.*)

Ebenezer W. Rider, Racine, Wis., U.S., 21st March, 1888; 5 years.

Claim.—1st. In combination with the oil can *A* having an apertured bottom, the central tube *B* slotted in each side *b*, at a point just within the can top, and having the fixed partition *C*, and the plunger rod *D*, provided at its upper end with the piston head *E* and the spring *F* on said rod, substantially as shown and described. 2nd. An oil can having an apertured bottom and a central internal tube slotted at its upper end, a fixed diaphragm or partition and a plunger rod and packing therein, and provided at its upper end with a piston head having a spring connected with it and moved upwardly by a button in the lower end of the tube, substantially flush with the bottom of the can retracted by said spring.

No. 28,734. Hinge. (*Charnière.*)

Jacob Wright, Mitchell, Dak., U.S., 21st March, 1888; 5 years.

Claim.—1st. In a hinge, the leaf *A*, the section *B* constructed in the form of an angle plate having the portions *b*, *bt*, the adjusting screw *C*, in the portion *b* of the section *B*, the section *D* with which the screw *C* engages, and the set-screws *E* in the portion *b* of the section *B*, as set forth. 2nd. The combination, with the leaf *A*, of the angular portion *B* having the two plates *b* and *bt*, with the elongated apertures *b*, formed in the former, and the screw *C* retained in connection with the latter, the section *D* having the two plates *d* and *dt*, the guide projections *d* on the plate *d*, and the screws *E*, working through the apertures *b*, substantially as described. 3rd. The combination, with the leaf *A*, the angle plate *B* hinged thereto, and the angle plate rigidly secured to the door frame, of the regulating screw and the set-screws, the set-screws being located in the same plate as the regulating screw, substantially as described. 4th. In combination with the leaf *A*, the angle plate *B* hinged thereto, and angle plate rigidly held in place, the angle of the plate *B* fitting in and guided by the angle of the rigid plate, and the screws for moving and setting the plate *B* in relation to the rigid plate, as set forth. 5th. In combination with the leaf *A*, the plate *B* hinged thereto, the rigid plate having the threaded bosses, and the adjusting screws swivelled in the plate *B* and engaging the bosses of the rigid plate.

No. 28,735. Revolving Clothes Drier.

(*Séchoir à linge tournant.*)

Willard A. Waldron, Toronto, Ont., 21st March, 1888; 5 years.

Claim.—The post *C* carrying the clothes-horse *D* and supported upon the rack *B*, in combination with a spindle *F*, journaled in the post *A* and connected to a disc *H*, having a worm *a* to engage with the teeth in the rack *B*, substantially as and for the purpose specified.

No. 28,736. Method of, and Apparatus for Silvering Glass for the Manufacture of Mirrors. (*Méthode et appareil d'éamage du verre pour la fabrication des miroirs.*)

Constant Laval, Kansas, Mo., U.S., 21st March, 1888; 5 years.

Claim.—1st. In silvering glass, the process herein described consisting in placing the glass upon a level slab or plate having an interposed absorbent sheet, pouring the silvering solution upon the surface of the glass and then heating the slab, whereby the heat is applied to the lower surface of the glass, substantially as described. 2nd. In silvering glass, the process herein described consisting in laying the glass upon the level top of a closed tank with an absorbent sheet interposed, pouring the silvering solution upon the surface of the glass and injecting live steam into the tank until the glass acquires the proper degree of heat, substantially as described. 3rd. The process set forth for silvering glass consisting in applying the silvering solution to one side of the glass, applying heat to the other side, drying the deposited metal, applying brown solution dissolved in alcohol while the glass is still hot, then applying silver-white ground in Japan and mix with turpentine and asphaltum varnish, and, while the latter coating is still fresh, applying silver-lining bronze powder, substantially as described. 4th. In an apparatus for precipitating the silver solution upon glass in the manufacture of mirrors, consisting of a closed pan or tank having a level top plate, a valved steam pipe entering the pan extended into a coil therein, and projecting outside the pan in a valved extension, and a pipe communicating with the latter and extending into the pan to deliver live steam

thereinto, substantially as described. 5th. In an apparatus for precipitating the silver solution on glass in the manufacture of mirrors, the combination of a closed pan or tank having a level top plate, an absorbent blanket on the surface of the plate to receive the glass, a valved steam pipe entering the pan extended into a coil therein, and projecting outside the pan in a valved extension, and a pipe or hose connected with the latter and in communication with the interior of the pan, substantially as described. 6th. An apparatus for precipitating the silver solution upon glass in the manufacture of mirrors, consisting of a closed tank having a level top plate, a valved steam pipe entering the pan extended into a coil therein, and projecting outside the tank in a valved extension, and adapted to communicate with the tank and with a suitable vessel, substantially as described.

No. 28,737. Electric Heater.

(*Calorifere électrique.*)

Watkins L. Burton, Richmond, Va., U.S., 21st March, 1885, 5 years.

Claim.—1st. In an electric heater, a resistance-piece covered with pulverulent or powdered fire-clay or its equivalent, substantially as described. 2nd. In an electric heater, a resistance-piece covered with pulverulent or powdered fire-clay and combined with heat-reservoirs, substantially as described. 3rd. In an electric heater, a form composed of fire-clay or of about which a resistance-piece is sustained, covered with powdered or pulverulent fire-clay or similar material, said resistance-piece being in circuit with a generator of electricity, substantially as described. 4th. In an electric heater, a resistance-piece in continuous contact with powdered or pulverulent fire-clay or its equivalent, substantially as described.

No. 28,738. Improvements in, or Applicable to Moderator or Carcel Lamps, to render them capable of Burning Mineral Oils. (*Perfectionnements dans les lampes modérateurs ou carcel, pour les rendre propres à brûler les huiles minérales.*)

Charles D. Aria, London, Eng., 21st March, 1885; 5 years.

Claim.—1st. Constructing or adapting moderator or carcel lamps in the manner substantially as hereinbefore described, so that the same are rendered capable of burning mineral oils without fear of explosion or undue heating of the parts of the lamp. 2nd. The employment of a secondary or additional reservoir furnished with an overflow pipe and located between the main reservoir and the burner proper, substantially as hereinbefore described and as shown in the annexed drawings and for the purposes specified. 3rd. The combination, with the overflow pipe, of a shield or guide, as and for the purpose specified. 4th. The combination, with the secondary or additional reservoir, of the open or skeleton frame or support for keeping the wick-case away from the oil, and for allowing free circulation of air to said wick-case and for keeping the oil in the secondary or additional reservoir cool, as described and shown. 5th. The employment and combination of two wicks, one of which dips into the secondary or additional reservoir and feeds the other or burning wick with oil, as described and shown. 6th. Providing the wick-case with a hinged and weighted disc of wire gauze, or its equivalent, for the purpose of preventing particles of charred or glowing wick falling into the secondary or additional reservoir, as described and shown. 7th. The improved burner having its parts constructed, arranged and combined substantially as hereinbefore described, and as shown in the annexed drawings and for the purposes set forth.

No. 28,739. Lithographer and Printer's Drying Rack. (*Rayon-secour de lithographe et d'imprimeur*)

Herman T. Koornar, Buffalo, N.Y., U.S., 21st March, 1885; 5 years.

Claim.—1st. An interchangeable paper rack or tray, for lithographers or printers use, consisting essentially of a door piece or pieces, having secured thereto side rails adapted for sliding upon a similar rack or tray beneath, and for the reception of a similar rack or tray above, in forming a stack, substantially as shown and described. 2nd. An interchangeable paper rack or tray, for lithographers or printers use, consisting essentially of a floor piece or pieces, having secured thereto recessed and grooved side rails adapted for sliding upon a similar rack or tray beneath, in the direction only of the length of the side rails, and adapted for the reception of a similar rack or tray above in forming a stack, substantially as shown and described. 3rd. A lithographer or printer's interchangeable sliding paper rack, consisting of the floor pieces *a* and the side rails *b, b*, each side rail having the inner wall *b₁*, the shelf or recess *b₂*, the guard *b₃* and the groove *b₄*, adapted for sliding register with the guard *b₃*, all arranged, as shown to form a drying stack for printed sheets, substantially as described.

No. 28,740. Printing Press. (*Presse d'imprimerie.*)

John F. W. Dorman, Baltimore, Md., U.S., 21st March, 1885, 5 years.

Claim.—1st. In a printing press, the combination, of the platen *U* having the extensions *b*, the fixed bar *F* and the rod *G*, the said extensions being notched to fit around the said rod, substantially as and for the purpose specified. 2nd. In a printing press, the combination of a rotating inking disk and an ink-distributing roller adapted to pass over the said disk, the same being adapted to make a full or complete endwise vibration at each revolution, substantially as and for the purpose specified. 3rd. In a printing press, the combination of a rotating inking disk, an ink-distributing roller supported by means of its spindle in the inking roller arms, transverse pins projecting laterally or radially from the said spindle near to its ends and in opposite directions, and helical collars rigidly attached to the faces of the said inking roller arms, and between the said arms and the said spindle, suitably situated pins, whereby, in the rotation of the said distributing roller, the same is made to vibrate endwise on the inking-disk, substantially as and for the purpose specified.

No. 28,741. Tent Pole. (*Mât de tente*)

Demetrius Jannopoulos, St. Louis, Mo., U. S., 22nd March, 1885; 5 years.

Claim.—1st. In combination with a tent-pole, a cap fitting on the upper end of the pole, having points or lugs bent or pressed into the sides of the latter, and a pin having metallic connection with the cap, substantially as and for the purpose set forth. 2nd. In combination with a tent pole, a cap fitting on the upper end of the pole, a central neck connected to the cap, and a pin fitting in the neck of the cap and extending therethrough into the pole, substantially as and for the purpose set forth. 3rd. In combination with a tent-pole, a cap fitting on the upper end of the pole and provided with points or projections by which it is secured to the pole, a hollow neck secured to the cap, and a pin fitting in the hollow neck and extending therethrough into the pole, substantially as and for the purpose set forth. 4th. In combination with a tent pole, a cap fitting on the upper end of the pole, a neck connected to the cap and having an upwardly tapering socket, and a pin fitting in the socket of the neck, substantially as and for the purpose set forth. 5th. The combination of the tent pole *1*, the cap *5*, formed with lugs *6*, and a socket *7* tapering upward or outward, and a pin *2* secured in said said socket, substantially as shown and described.

No. 28,742. Car-Coupling. (*Attelage de chars.*)

Silas B. Fyler, East Syracuse, N.Y., U.S., 22nd March, 1885; 5 years.

Claim.—1st. In a car-coupling, a link guide, consisting of a plate provided with a link slot, larger than the link, suspended in front of the draw-head from an arm connected to a lever having a fulcrum on the car, and adapted to operate vertically and longitudinally, said link guide adapted to be raised or lowered vertically and swung laterally by said lever, substantially as described and for the purposes set forth. 2nd. In a car-coupling, the levers *C* fulcrumed in bearings upon the car, and having longitudinal movement therein, and pivotally connected to the arm *D*, the rod *E* adapted to move vertically and to rotate in its bearings, and connected to the arm *D*, and the slotted link guide *9* suspended from the arm *D*, in combination with the draw-head *B* and link *11*, substantially as described and shown. 3rd. A car coupling, consisting of a rod *E* mounted upon the car and provided with an arm *D*, the levers *C* connected to said arm, and a link guide and pin also connected thereto, in combination with the draw head and link, constructed and operating together, substantially as shown and described. 4th. A car-coupling consisting of a rod *E*, mounted upon the car and provided with an arm *D*, the levers *C* connected to said arm, and a pin also connected thereto, in combination with the draw head and link, constructed and operating together, substantially as shown and set forth. 5th. In a car-coupling, the rod *E* mounted in bearings *2* on the car, and adapted to move vertically and to rotate therein, and provided with an adjusting collar *3*, in combination with the bearings *2*, substantially as described and shown. 6th. In a car-coupling, the combination of the vertical rod having a stud thereon, and the supporting bracket, provided with a slot way at the side of the aperture through which said rod passes, substantially as described and for the purposes specified.

No. 28,743. Warm Air Furnace.

(*Calorifere à Air*)

Thomas G. Wanless, Toronto, Ont., 22nd March, 1885, 5 years.

Claim.—1st. A fire pot for a warm air furnace, constructed of vertical sections, with ribs on its inner and outer surface, for the purposes set forth. 2nd. A combustion dome for a warm air furnace, constructed so as to enclose the fire pot to keep the sections thereof in position, and also provide an air space between the combustion dome and fire pot, said combustion dome provided with a number of small apertures around its circumference and near to the lower edge thereof, for admitting air which passes up through the air space between the fire pot and combustion dome, to ignite the gases arising from the burning fuel, as set forth. 3rd. The angular rim or encircling the combustion dome at its lower edge, and provided with apertures equal in size and number to those in the dome, and so placed as to coincide with the apertures in the dome, and which rim may be moved sidewise by rod or lever for the contraction or enlargement of said apertures, as set forth. 4th. A dual radiator for a warm air furnace, constructed so that the active heat will pass from the combustion dome into, and circulate around the upper section thereof, thence passing down suitable pipes into, and circulate around the lower section thereof, thence passing out into the smoke-pipe, from which it is carried to the chimney, as specified and described. 5th. A cold air receiver for a warm air furnace, constructed partly around the outer side of the base of the furnace casing, for receiving and distributing the cold air to the warm air chamber inside of the furnace casing, as set forth. 6th. An air pipe for a warm air furnace, connecting the cold air receiver with one or more of the warm air pipes, for the purpose of supplying cooler air to the apartments of the building when necessary, as specified and shown. 7th. In a warm air furnace, the combination of two radiators *B* and *C*, placed horizontally one above the other and by means of stop plates *N*, direct draught regulator *O*, junction pipes *D*, the active heat is made to circulate entirely around each radiator before passing out into the smoke pipe, substantially as arranged and operating as set forth. 8th. In a warm air furnace, the combination of the combustion dome *A*, fire pot *L*, grate *K*, ash pan *K*, dust pipe *E*, with check damper *E*, substantially as arranged and operating as set forth. 9th. In a warm air furnace, the combination of the cold air box *H*, with regulating slide *A*, cold air receiver *U*, cold air pipe *P*, warm air chamber *J* and warm air pipes *H*, substantially as arranged and operating as set forth.

No. 28,744. Feeding Bottle for Babies.

(*Biberon.*)

Francis Giroux, Montreal, Que., 22nd March, 1885; 5 years.

Claim.—In a feeding bottle for babies, the foot valve *H* having the conical projections *J*, passage *L* and valve *M*, in combination with

the glass tube F, rubber tube E and bottle A, having a volume graduation C, as above described and for the purpose set forth.

No. 28,745. Lining for Furnaces.

(*Pariois de fourneau*)

Robert L. Walker, Boston, Mass., U.S., 22nd March, 1888; 5 years.

Claim.—1st. In combination, a series of pipes *a*, heads *b*, *b*₁, couplings *b*₂, *b*₃, *b*₄, *b*₅ and drums *f*, *f*₁, substantially as described. 2nd. In a steam boiler furnace, the two side linings and the bottom lining or grate, each composed of a series of wrought pipes with cast heads, substantially as shown, in combination with the plates *g*, *g*₁, all substantially as described.

No. 28,746. Coffin or Casket Stool or like Trestle Support.

(*Tréteau de cercueil*.)

Benjamin G. Casler, Cleveland, Ohio, U.S., 22nd March, 1888; 5 years.

Claim.—1st. In a coffin or casket stool, the combination, with a rod or pipe bearer, having standards or legs, of a central T and a standard connected thereto and adapted to be turned into and out of line with the standards of the bearer, substantially as and for the purposes specified. 2nd. In a coffin or casket stool, the combination of a rod or pipe bearer having threaded standards provided with thimbles, and a central movable T having a threaded standard provided with a thimble, substantially as and for the purposes specified. 3rd. In a coffin or casket stool, the combination, with a bearer having standards, of a central T and a cross-piece provided with standards, and adapted to be turned into and out of line with the bearer and its standards, substantially as and for the purposes specified. 4th. In a coffin or casket stool, the combination, with a bearer composed of pipe sections and a central T for connecting the same, of a central rod connected to the pipe sections, and suitable standards or legs, substantially as and for the purposes specified. 5th. In a coffin or casket stool, the combination, with a bearer having standards, of an intermediate movable T provided with a standard or standards, and stops on the bearer to limit the movement of the T and straddle of the standards, substantially as and for the purposes specified. 6th. In a coffin or casket stool, the combination, with a bearer having standards, of an intermediate movable T provided with a standard or standards and adjustable stops on the bearer, substantially as and for the purposes specified. 7th. In a coffin or casket stool, the combination, with a bearer, of an intermediate movable T provided with a standard or standards, and jam nuts on the bearer for limiting the movement of the T, substantially as and for the purposes specified. 8th. In a coffin or casket stool, the combination, with a bearer having standards, of an intermediate movable T, provided with a standard or standards, and a friction clamp for controlling the slack of the movable T, substantially as and for the purposes specified. 9th. In a coffin or casket stool, the combination, with a bearer having standards, of the central pipe or rod, a movable T provided with a standard or standards, and a set screw for controlling the T, substantially as and for the purposes specified. 10th. In a coffin or casket stool, the combination, with a bearer provided with standards, of a movable T and a Y-fitting provided with standards, substantially as and for the purposes specified.

No. 28,747. Compass, Calipers, etc.

(*Compas, compas d'épaisseur, etc.*)

Joshua Stevens, Chicopee Falls, Mass., U.S., 22nd March, 1888; 5 years.

Claim.—1st. A compass, caliper, or other analogous instrument, having its hinge joint formed with the pivotal ends of the legs on opposite sides of the hinge-axis and clamped between two washers, the legs being pivotally connected together by means of a concentric annular rib on the washer entering a concentric groove in the legs, or vice versa. 2nd. A compass, caliper, or other analogous instrument, the pivotal ends of the legs of which are formed entirely on opposite sides of a plane coincident with the hinge-axis, combined with a pinle passing between them, and heads or washers on opposite sides, united by said pinle and constructed with interfitting concentric annular ribs and grooves formed on the legs and in one or both of said washers respectively. 3rd. A compass, caliper, or other analogous instrument, the pivotal ends of the legs of which are formed entirely on opposite sides of a plane coincident with the hinge-axis, and having grooves concentric with said axis, in combination with a washer having an annular rib entering said grooves with a washer on the opposite side of the legs, and a pinle passing through from side to side between the legs, with its opposite ends fixed to the respective washers. 4th. A compass, caliper, or other analogous instrument, consisting of the combination of legs A, A, formed with recess *g* on one side, and concentric grooves *c* on the other, washer *c* formed with rib *b* entering said groove, washer B coming against the opposite side of the legs, and having boss *f* entering said recess *g* and pinle *a*. 5th. A compass, caliper, or other analogous instrument, the pivotal ends of the legs of which are formed entirely on opposite sides of a plane coincident with the hinge-axis cut away at *c*, *c*, and hinged together by means of washers on opposite sides of the head, and interfitting concentric annular ribs and grooves formed on the legs and on one or both of said washers respectively, and combined with a cylindrical curved leaf spring arranged to enclose the head. 6th. A compass, caliper or other analogous instrument, the pivotal ends of the legs of which are on opposite sides of the hinge-axis and formed with concentric annular grooves *c*, *c*, with washers between which the legs are clamped, and with one or more rings *b* entering said grooves and held therein by the washers, substantially as described with reference to Fig. 11. 7th. In a compass, the combination, with the leg thereof, of a pencil or needle holder having a hole or socket to receive the pencil or needle, a screw arranged at an acute angle to the axis of said socket and a clamping nut screwing on said screw and adapted to bear against the exterior of the pencil or needle. 8th. In a compass, the combination, with the leg thereof, of a pencil or needle holder having a hole or socket to receive the pencil or needle, a screw arranged at an acute angle to the axis of said socket and

screwing into said leg or holder in order to adjust the length of the leg, and a clamping nut screwing on said screw and adapted to bear against the exterior of the pencil or needle. 9th. In a compass, the combination, with the leg thereof, of a pencil or needle holder having a hole or socket to receive the pencil or needle, a screw fixed to said holder at an acute angle to the axis of said socket and screwing into said leg in order to adjust the length of the leg, a set nut on said screw to be tightened against said leg, and clamping nut screwing on said screw and adapted to bear against the exterior of the pencil or needle.

No. 28,748. Clothes Pounder.

(*Pilon à linge*.)

Henry Rath, Brookville, Ont., 22nd March, 1888; 5 years.

Claim.—A clothes pounder or washing consisting of external and internal cones A, B, their bases connected by an annular perforated plate or ring C, and at the apex by a tubular shaft D, provided with a handle E and with or without valve F, as set forth.

No. 28,749. Excavator or Machine for Removing Snow, etc., from Railway Tracks, etc.

(*Chasse-neige et chasse-pierre de chemin de fer, etc.*)

William O. Barnes, Paterson, N.J., U.S., 22nd March, 1888; 5 years.

Claim.—1st. In an excavator, a fan wheel having on its periphery a series of longitudinal knives, each knife being placed a sufficient distance in advance of a vane so as to leave room between the back of the knife and the front of the vane for the escape of the snow or other material, substantially as described. 2nd. In an excavator fan wheel, the combination of spokes *b*, *b*₁, vanes *v*, *v*₁, rings *m*, *m*, and knives *k*, *k*, substantially as shown and described.

No. 28,750. Refining Petroleum.

(*Raffinage du pétrole*.)

Herman Frasch, London, Ont., 22nd March, 1888; 5 years.

Claim.—1st. The process of purifying Canadian and similar petroleum oils which contain sulphur compounds, whose presence gives to said oil the property of dissolving lead oxide, by distilling the same with the oxidizing oxides mixed with, or dissolved in, the oil under treatment, substantially as described. 2nd. The process of purifying Canadian and similar petroleum oils which contain sulphur compounds, whose presence gives to said oil the property of dissolving lead oxide, by distilling the same with the oxidizing oxides mixed with, or dissolved in, the oil under treatment, and washing the distillate from such operation with sulphuric acid, substantially as described. 3rd. The process of purifying Canadian and similar petroleum oils which contain sulphur compounds, whose presence gives to said oil the property of dissolving lead oxide, by subjecting the oil to the action of the oxidizing oxides of the metals which form convertible sulphides, separating the oil and spent material from each other, roasting and oxidizing the spent material, and treating the aforesaid oil with the revived material, substantially as described.

No. 28,751. Car-Coupler.

(*Attelage de chars*.)

The Consolidated Coupling Company, of New Jersey (assignee of Samuel W. McMunn and George H. Benjamin, New York, N.Y.) U.S., 23rd March, 1888; 15 years.

Claim.—1st. In a car-coupler, and in combination with a draw-head, having an arc-shaped slot formed therein, of a movable knuckle provided with an arc-shaped stem and a buffing face, substantially oval in shape, as and for the purpose described. 2nd. In a car-coupler, and in combination with a draw-head having an arc-shaped slot formed therein, and the supplemental arc-shaped top and bottom bearing shoulders, of a movable knuckle provided with an arc-shaped stem and the bearing shoulders on the top and bottom of said stem, which register with the shoulders of the slot, as and for the purpose described. 3rd. In a car-coupler, and in combination with a draw-head having an arc-shaped slot formed therein, and the rectangular buffing shoulders on the top and bottom plates of said draw-head, of a movable knuckle provided with an arc-shaped stem, a hook or coupling portion and the rectangular buffing shoulders on the top and bottom of said knuckle, as and for the purpose described. 4th. In a car-coupler, and in combination with a draw-head of the class described, provided with a buffing shoulder on the top and bottom plates of said draw-head, the buffing surface of which is at right angles to the axis of the coupler, of a movable knuckle, movable in said head and provided with a buffing surface also at right angles to the axis of the coupler, and corresponding, when the knuckle is closed, with the buffing surface of the draw-head, whereby the blow received by the knuckle in coupling is transmitted in a plane parallel to the axis of the coupler. 5th. In a car-coupler, and in combination with a draw-head, having an arc-shaped slot formed therein, and semi-cylindrical vertical opening for the locking pin, of a movable knuckle provided with horizontal ribs on the arc-shaped face of said knuckle stem, and a semi-cylindrical vertical opening for the locking pin in the body of said stem, as and for the purpose described. 6th. In a car-coupler, and in combination with a draw-head having an arc-shaped recess formed therein, of a movable knuckle provided with an arc-shaped stem, having ribs on the arc-shaped face of said stem, and a locking pin square at its top and cylindrical at its upper and middle portions, and semi-cylindrical between its upper and middle portions and at the lower portion of said pin, substantially as and for the purpose described. 7th. As a latch pin for a car-coupler constructed substantially as specified, the pin L, square at the top, cylindrical at N and O, and semi-cylindrical at P and Q, as and for the purpose described. 8th. In a car-coupler, substantially as specified, a latch pin hole square at the top and substantially concentric with the curved inner surface of the recess in the coupler head, said latch pin hole contracted at the bottom of the coupler head to a semi-cylindrical form, and laying entirely outside of the path in which the jaw moves, as and for the purpose described. 9th. In a car-coupler and in combination with a draw-head provided with an arc-

shaped slot, of a movable knuckle, having an arc-shaped stem and oval buffing face, and a straight, or substantially straight, traction face, as and for the purpose described. 10th. In a car-coupler, a draw-head, the buffing face of the cavity of which conforms in shape with the buffing face of the movable knuckle of said coupler, substantially as and for the purpose described. 11th. In a car-coupler, a draw-head, the plane of the curvature of the buffing face of which is at an angle of 77° with the axis of said coupler, substantially as and for the purpose set forth. 12th. In a car-coupler, a knuckle, the plane of the curvature of the buffing face of which is at an angle of 77° with a line drawn through the centre of said knuckle, or the point from which the arc, which determines the shape of the end of the knuckle, is struck, substantially as and for the purpose described. 13th. In a two-part car-coupler, the parts of which are identical in construction, the combination, with the draw-head, the angle of the buffing faces of which is 77° to the axis of the draw-head, of the movable knuckle, the angle of the buffing faces of which is 77° , with a line drawn through the centres of said knuckles, whereby the angle of movement of the couplers relative to each other is 13° , substantially as and for the purpose described.

No. 28,752. Galvanic Battery.

(*Batterie galva. . .*)

James Serson and James O. Whitton, Boston, Mass., U. S., 23rd March, 1888; 5 years.

Claim.—1st. In a galvanic battery of the character described, the perforated porous jar B, provided with the feeding cup D and gutter E, constructed and arranged substantially as shown. 2nd. In a galvanic battery of the character described, the jar A provided with the cover C, in combination with the porous jar B, provided with the cup D and gutter E, substantially as specified. 3rd. In a galvanic battery of the character described, the perforated porous jar B provided with the cup D and gutter E, the containing jar A provided with the cover C, the cylindrical zinc plate F standing in the gutter E, the carbon plate H disposed in the jar B, the acid N disposed in the cup D, the acidulated solution K disposed in the jar A, the free mercury I disposed in the gutter E, and carbon J disposed in the jar B, all combined and arranged to operate substantially as set forth. 4th. In a galvanic battery of the character described, a perforated porous jar provided with a gutter for containing free mercury and with a cup for containing a reinforcing acid, said cup and gutter being formed integral with the body of the jar, and the gutter and cup disposed on the outer side of said body, the cup being interposed between the ends of said gutter, substantially as shown and described.

No. 28,753. Car Coupling. (*Attelage de chars*)

William McKillop (assignee of Christopher Snyder), Henrietta, Penn., U. S., 23rd March, 1888; 5 years.

Claim.—1st. The combination, with the bearing-rod having an eye at one end, a nut at the other end, and a collar intermediate of its ends, of the forked lever fulcrumed on said bearing-rod, and the bolt for attaching the bearing-rod to the sill-piece of the car, substantially as specified. 2nd. The combination, with the sill-piece of a car, provided with a draw-head and a supporting hook, of the bearing-rod provided with the nut, collar and eye, the forked lever fulcrumed to said bearing-rod and the bolt connecting the bearing-rod with the sill-piece of the car, substantially as specified.

No. 28,754. Hot Water Boiler.

(*Calorifere à eau.*)

The Pierce, Butler and Pierce Manufacturing Company, Syracuse (assignee of Alfred Catchpole, Geneva, N.Y.), U. S., 23rd March, 1888; 5 years.

Claim.—1st. In combination with the combustion chamber F, the annular pipe E, formed with the outward projecting rim r and downward deflected flange r' on said rim, and embracing thereby the top portion of the combustion chamber, substantially as described and shown. 2nd. In combination with the combustion chamber F, annular pipes B, D and vertical connecting pipes d, d, the annular pipe E formed with the inward projecting rim e, outward projecting rim r and downward deflected flange r', on the latter rim, embracing the top portion of the combustion chamber, and the magazine C provided with the flare f and suspended thereby from the internal rim e, substantially in the manner described and shown. 3rd. The combination, with the hollow fire-pot shell B, of the sets of pipes D, D and D', D', arranged concentrically with each other, and communicating separately from each other with the interior of the shell B, respectively at diametrically opposite points in the circumferences thereof, and the dome E arranged over the sets of pipes and communicating separately with the same at diametrically opposite points in the circumferences thereof, whereby the water is caused to circulate across the interior of the dome, substantially as described and shown.

No. 28,755. Steam Pipe Connection between Railway Cars. (*Joint de tuyau de vapeur entre les chars de chemin de fer.*)

Julius R. Drodzowski and John Kolb, Erie, Penn., U. S., 23rd March, 1888; 5 years.

Claim.—A flexible connection between the steam pipes of adjacent railway cars, consisting of the coupling D and the two flat inclined coils B and B', secured to the steam pipes and to the said coupling, and having their bends gradually increasing in amplitude as they recede from the coupling to distribute the strain upon them in rounded curves, in combination with the hooks rigidly securing the higher ends of the coils underneath the cars, and the flexible chains supporting the lower ends of the coils near the coupling, so that the water may drain off when the pipes are disconnected, substantially as and for the purpose set forth.

No. 28,756. Gas Lamp with Preparatory Heating of the Gas and the Combustion Air. (*Lampe à gaz avec chauffage préparatoire du gaz et de l'air de combustion.*)

August Kubnt and Robert Deissler, (assignees of Hermann Schwidinsky), Berlin, Germany, 23rd March, 1888; 5 years.

Claim.—1st. In a gas lamp with preparatory heating of the gas and the combustion air, the combination of the gas chamber g with the combustion air chamber L, plate A, burner tubes f with spreading sheet m, cylinder v with plate u, chimney R with ascending cross bars w, v, a regulating device t at the top of the chimney, gas tube D and globe G, substantially as described and shown. 2nd. In a gas lamp with preparatory heating of the gas and the combustion air, the combination of the gas chamber g being formed out of a top plate a, with ribs r, r, having saw-like notches, and a bottom plate b with ribs r, having similar notches, said plates being screwed together so that the ribs of one plate touch the other plate with the combustion air chamber L, plate A, burner-tubes f with spreading sheet m, cylinder v with plate u, chimney R with ascending cross bars w, v, a regulating device t at the top of the chimney, gas tube D and globe G, substantially as described. 3rd. In a gas lamp with preparatory heating of the gas and the combustion air, the combination of the gas chamber g with the combustion air chamber L, plate A, burner tubes f with spreading sheet m, cylinder v with plate u, chimney R arranged inside the lamp and enlarged at its middle part about the gas chamber g, ascending cross bars w, v in the same, a regulating device t at the top of the chimney, gas-tube D and globe G, substantially as described and set forth. 4th. In a gas lamp with preparatory heating of the gas and the combustion air, the combination of the gas chamber g with the combustion air chamber L, plate A, burner tubes f with spreading sheet m, cylinder v with plate u, chimney R with the regulating semicircular plates n, n, and screw t with right and left handed threads, the ascending cross-bars w, v, gas tube D and globe G, substantially as described.

No. 28,757. Barn. (*Grange.*)

John Graham, Chinguacousy, Ont., 24th March, 1888; 5 years.

Claim.—1st. As an improved frame for a barn, a bent formed by a cross-beam B, tenoned on the top of the side-posts A, and the main plates fitted on to tenons formed in the ends of the cross-beams, in combination with the principals D, stepped into the cross-beam B, and braced to the cross-beam B, by vertical bolts F extending through the truss-beam E and cross-beam B, substantially as and for the purpose specified. 2nd. As an improved frame for a barn, a bent formed by a cross-beam B, tenoned on the top of the side-posts A, and the main plates fitted on to tenons formed in the ends of the cross-beams, in combination with the principals D, stepped into the cross-beam B and braced to the cross-beam B by vertical bolts F extending through the truss-beam E and cross-beam B, a scaffold girt H, tenoned into the side-post A, having a slanting prop-brace I, inserted between the scaffold girt H and the cross-beam B, the said scaffold girt being trussed by a vertical bolt J, substantially as and for the purpose specified.

No. 28,758. Drop-Hammer. (*Sonnette.*)

Frank M. Leavitt, Brooklyn, N.Y., U.S., 24th March, 1888; 5 years.

Claim.—1st. In a drop-hammer, the combination, with the hammer head, of two separable friction pulleys to which power is applied, and a flexible strap or band connected with the hammer head passing over one of said pulleys and between the two, the said pulleys being so arranged, and the hammer and strap so hung therefrom, that the grasp of the pulleys on the belt is determined solely by the weight of the hammer head acting to force the pulleys together with suitable means for separating the pulleys, to release the belt and allow the hammer to fall, substantially as herein set forth. 2nd. In a drop-hammer, the combination, with two separable friction pulleys, a flexible strap or connection passing between both pulleys over one of them and hanging therefrom, with a hammer head hang to the pendant end of the strap in such manner that its weight tends to force the pulleys together to grip the strap and a movable separator arranged to effect the alternate separation and approach of the pulleys, tappets or projections arranged in the path of the hammer at the ends of the stroke, and operative connections between said tappets and separator, substantially as shown and described. 3rd. The combination, in a drop-hammer, with a fixed driving pulley, of a pendulous or movable driven pulley tending to gravitate freely against the fixed pulley, a flexible connection or band passing between said pulleys and over the pendulous pulley and hanging pendant therefrom, and a hammer head attached to said pendant strap with a device for separating the pendulous pulley from the fixed pulley at intervals in accordance with the strokes of the hammer head, substantially as herein set forth. 4th. The combination, in a drop-hammer, of the fixed pulley G, and movable driving pulley G', with the pivoted pendulous frame M, in which the same is hung, flexible connection D passing between said pulleys and over the pulley G, and hammer C hung to said connection with a supporting or separating device, to normally hold the pendulous pulley away from the fixed pulley and alternately allow the same to gravitate against said fixed pulley by the weight of the hammer head, substantially as shown and described. 5th. The combination, with a drop-hammer head, two separable friction pulleys, a flexible connection attached to said head and engaged by said pulleys, and arranged to apply the weight of the hammer head itself to the production of the required pressure upon said connection by said pulleys, of a wedging separator arranged to pass between and separate said pulleys, and mechanism for holding the pulleys apart when so separated until the hammer head has effected its blow, substantially as and for the purposes described. 6th. In a drop-hammer, the combination, with the hammer head and a belt or band, whereby the same is lifted, of two separable friction pulleys to which the driving force is imparted, and between which the belt is gripped and drawn to raise the hammer head, with a revolving separator or

wedge arranged to enter the bits of the pulleys, and thus revolve with the same and separate the pulleys by the action of the rotating force, and thereby free the belt and allow the hammer to fall, with escapement or detent mechanism controlling the arrest and release of the separator coincident with the motions of the hammer, substantially as herein set forth. 7th. The combination of two separable friction pulleys, a drop-hammer head, a belt or strap attached to said head and engaged with said pulleys in such manner that the weight of the hammer head itself forces the pulleys together when the hammer head is lifted, and a wedging separator pivoted to the shaft of the fixed pulley and arranged to pass between said pulleys at the proper time for forcing said pulleys apart, releasing the belt or strap from pressure and permitting the hammer to drop, substantially as and for the purpose set forth. 8th. The combination of a friction pulley having fixed bearings, a movable pulley, a swinging support for such movable pulley, a drop-hammer head, a strap, belt or band engaged with said pulleys, and attached to said head or drop in such manner that the weight of the head or drop presses said swinging frame radially toward said movable pulley, for clamping said strap, belt or band while lifting said head or drop, and a wedging separator pivoted to the shaft of the fixed pulley and arranged to pass between, and separate said pulleys at the proper time, for releasing the belt and permitting the hammer head to fall, substantially as and for the purposes specified. 9th. In a drop-press or hammer, the combination, with the fixed driving pulley G, movable driven pulley G pendulous frame M, strap D, hammer C and gearing H, H, and suitable means for causing the approach and separation of said geared pulleys, substantially as shown and described. 10th. In a drop-hammer, the lifting mechanism of which consists in two friction pulleys, one of which has fixed, and the other movable bearings, and a strap, belt or band clamped between said pulleys and attached to the hammer head or drop, the separator herein described, which consists of a body S pivoted to the shaft of the pulley having fixed bearings, and having formed on its wedges t and u, extending laterally from said body over the perimeter of the pulley having said fixed bearings, substantially as and for the purposes set forth. 11th. In a drop-hammer, the combination of a hammer head or drop C, a pulley G₁ having fixed bearings, a swinging support M having the notched projection N, a pulley G₂ having bearings in said swinging frame, a strap, belt or band D attached to the hammer head passing over the pulley G₁ and between the pulleys G₁ and G₂, a wedging separator S pivoted to the shaft of the pulley G₂, and having formed thereon laterally extending wedges t, u and stops I, I, an escapement O pivoted to the supporting frame of said fixed pulley and provided with an upwardly extending projection q and hook or tooth q₁, a pawl p pivoted to said escapement or support, for alternately engaging and disengaging said projection N, tappets or tappet-levers R, R, pivoted to guide B, and link Q pivoted to, and connecting the escapement Q with said tappets or tappet-levers, substantially as and for the purposes specified.

No. 28,759. Sulky Gear. (*Train de dsobhgante.*)

John B. Armstrong, Guelph, Ont., 24th March, 1888. 5 years.

Claim.—1st. The shafts E, connected to the axle A by the elastic curved single plate springs B, in combination with the elastic spring C curving inwardly and upwardly to form a support for the seat D, substantially as and for the purpose described. 2nd. The elastic curved single plate spring B, rigidly fastened to the shaft E and to the axle A, in combination with the elastic steel spring C, curving inwardly and upwardly to the seat D, to which they are rigidly secured substantially as and for the purpose described. 3rd. In a sulky or two-wheeled vehicle, the direct attachment of the axle to the shafts by single plate tempered steel springs, substantially as and for the purpose described. 4th. In a sulky, a curved single plate tempered spring C, rising from the flat at the bent rear end of the shafts to support the seat, substantially as described and for the purpose set forth.

No. 28,760. Gig Running Gear.

(*Train de cabriolet.*)

John B. Armstrong, Guelph, Ont., 24th March, 1888; 5 years.

Claim.—1st. The shafts E connected to the axle A by a curved or bent draw spring B, and to the rear of the body of the cart or gig by the tapered spring C, in combination with the spring F rigidly connected to the bottom of the body at one end, and flexibly connected at its other end to the shaft bar G, substantially as and for the purpose specified. 2nd. The body-loop D pivoted on the end of the springs C, in combination with the springs F, rigidly fastened at one end to the body, and connected at their other ends to the shaft bar G, by the free swinging shackles e, substantially as and for the purpose specified. 3rd. The springs C, rigidly fastened to the raised rear part of the shaft E, and extending back from the same to the body support D on which the body is pivoted, substantially as and for the purpose specified.

No. 28,761. Abdominal and Pubic Protector. (*Protecteur abdominal et pubien.*)

Alfred Codd, Winnipeg, Man., 24th March, 1888; 5 years.

Claim.—An abdominal and pubic protector, the lamb skin A, as described, and provided with waist belt B, straps C and D, crossed and buckled as described and shown for the purpose set forth.

No. 28,762. Apparatus for Producing Artificial Respiration. (*Appareil pour produire la respiration artificielle.*)

George E. Fell, Buffalo, N.Y., U.S., 24th March, 1888, 5 years.

Claim.—1st. The combination, with the tracheal or tracheotomy tube composed of an outer tube a and inner tube b, of an air supply tube c detachably connected with the inner tube b, substantially as set forth. 2nd. The combination, with a tracheal or tracheotomy tube, of an air forcing apparatus, a tube connecting said apparatus with the tracheal or tracheotomy tube, and a regulating valve, whereby communication can be established at will between the tracheal

or tracheotomy tube and the air forcing apparatus, or the outer air, substantially as set forth. 3rd. The combination, with a tracheal or tracheotomy tube, of an air forcing apparatus, a tube connecting said apparatus with the tracheal or tracheotomy tube, a regulating valve and an air warming apparatus, substantially as set forth.

No. 28,763. Hinge specially applicable to Winter Sashes, Fan Lights, Greenhouse Lights, etc. (*Charnière propre aux doubles croisées, lunettes, croisées de serres, etc.*)

Septimus A. Clark, Regina, N.W.T., 24th March, 1888, 5 years.

Claim.—The combination of the hook having side flanges B, B, and the eye having web or flange A and bar C, substantially as and for the purpose hereinbefore set forth.

No. 28,764. Recto-Vaginal Speculum.

(*Speculum recto-vaginal.*)

Joseph W. McCall, Huntingdon, Tenn., U.S., 24th March, 1888, 5 years.

Claim.—In combination with a cylindrical tubular speculum with slotted side and closed end, a slide extending the length of the slot and having its outer surface depressed from the line of circumference of the tube, substantially as and for the purpose set forth. In combination, the cylindrical tubular speculum, with slotted side and closed end, having the depression d, the mirror secured in an inclined position in the front end of the tube, and the slide fitted to the slot in the tube, and having its outer surface depressed in cross-section from the line of circumference of the tube, substantially as and for the purpose set forth.

No. 28,765. Securing Pulleys, etc., to Shafts.

(*Manière d'assujettir les poulies, etc., aux axes.*)

John H. Wynno, Petrolia, Ont., 24th March, 1888, 5 years.

Claim.—The combination, with a shaft G and pulley having a hub axially bored to taper for a portion C of its length, and a portion D having a larger bore of uniform diameter and screw-threaded, of a tapering hollow cylinder or bush E, having an open space E₁ from end to end, and a hollow follower H sleeved on said shaft and screwing into the said threaded portion D of the hub, to force the bush close around the shaft and frictionally hold the hub and shaft unitedly, as set forth.

No. 28,766. Combined Latch and Lock.

(*Loquet-serrure.*)

Charles Sandford, William Feeney and James Feeney, Madoc, Ont., 24th March, 1888; 5 years.

Claim.—1st. In a combined latch and lock, the combination of the casing A, a, A₁, having the post a₁ and pin B₁, the latch bolt B having a central slot b, eyes b₁, latch heads b₁₁, recesses b₁₁₁ and lugs b₁₁₁₁, hung eccentrically upon the pin B₁ and resting in its normal position upon the post a₁, the lever D adapted to be operated by the spindle C, and operating the latch bolt B by lugs d, d₁, engaging the slot b and lug b₁₁₁₁, a latch key E engaging the lug b₁₁₁₁, and inserted through keyholes e, partly covered by the latch bolt B, locking cams F, F, guided in a race g, g₁, g₁₁, g₁₁₁, and having heads f, f₁ and shoulder f₁₁, and adapted to be operated by a key, the head f adapted to abut between the post a₁, and the rear shoulder of the projecting latch bolt, substantially as set forth. 2nd. In a combined latch and lock, the combination of the casing A, a, A₁, having the post a₁ and pin B₁, the latch bolt B, having a central slot b, eyes b₁, latch heads b₁₁, recesses b₁₁₁ and lugs b₁₁₁₁, hung eccentrically upon the pin B₁, and resting in its normal position upon the post a₁, the lever D adapted to be operated by the spindle C, and operating the latch bolt B by lugs d, d₁, engaging the slot b and lugs b₁₁₁₁, a latch key E engaging the lug b₁₁₁₁ and inserted through the keyholes e, partly covered by the latch-bolt B, substantially as set forth. 3rd. In a combined latch and lock, the combination of the casing A, a, A₁, having the post a₁ and pin B₁, the latch bolt B having a central slot b, eyes b₁, latch heads b₁₁, recesses b₁₁₁ and lugs b₁₁₁₁, hung eccentrically upon the pin B₁ and resting in its normal position upon the post a₁, an operating lever acting upon the latch bolt B by a lug d, substantially as set forth. 4th. In a combined latch and lock, the combination of the casing A, a, A₁, having the post a₁, pin B₁, guides g, g₁, g₁₁, g₁₁₁, keyhole G₁, the latch bolt B, having a central slot b, eyes b₁, latch heads b₁₁, recesses b₁₁₁ and lugs b₁₁₁₁, hung eccentrically upon pin B₁ and resting in its normal position upon the post a₁, an operating lever acting upon the latch bolt B by a lug d and the cams F, F₁, having heads fitting in the recess between the post a₁ and the rear shoulder of the forward end of the latch head b₁₁, shoulder heads f₁ adapted to be operated by a key, and shoulders f₁₁ adapted to be engaged by the stop g₁₁, substantially as set forth.

No. 28,767. Crane Attachment for Coal Carts, etc., for Delivering Commodities. (*Ajustage des grues aux voitures à charbon, etc., pour livrer les marchandises.*)

Theobald M. Hackott and Edward F. Hackott, Albany, N.Y., U.S., 24th March, 1888; 5 years.

Claim.—1st. The combination, with a cart or other vehicle, of a crane consisting of the following parts, to wit a post 1, which is pivoted to the box of the cart to swing on its vertical axis, a tilting arm 3 that projects laterally from, and is hinged to, the head of said post, a jointed diagonal brace 4, having a hinge joint 5 near its middle, and having one of its ends hinged to said post, and its opposite end hinged to said arm, and a bent lever 6 that is pivoted to the head of said post, and is connected by a rod 7 to the joint of said diagonal

braco, as and for the purpose herein specified 2nd A crane for coal carts and other vehicles, consisting of a crane-post 1, having a tilting arm 3 hinged to its head, so as to project laterally therefrom, a diagonal brace 4, which is hinged at one end to said post, and at the opposite end to said arm, and a lever 6 that is pivoted to the head of said post, and is connected by a rod 7 to a joint 5 of the diagonal brace, as and for the purpose herein specified.

No. 28,768. Faucet. (Robinet)

Frederick O. Young and Laban Heath, Revere, Mass., U. S., 24th March, 1888; 5 years.

Claim.—1st. In a faucet of the character described, a body having an induction and an ejection chamber opening into each other, a valve for closing the opening between said chambers and shutting the faucet, an anti-chamber opening into said induction chamber, a vent-hole for admitting air to close said vent-hole to prevent the escape of water, and means for preventing said valve from escaping from said anti-chamber, substantially as set forth. 2nd. In a faucet of the character described, the body A, valves B, z, chambers k, g, m, vent v, and pin v, combined and arranged to operate substantially as described. 3rd. In a faucet of the character described, the plug C provided with the chamber m, vent v, valve z and pin v, in combination with the body A, provided with the valve B, and having the chambers k, d, the chamber m being so arranged as to open into the chamber d, substantially as set forth.

No. 28,769. Loom Temple. (Temple de métier.)

William H. Taylor, Hampton, Ont., 24th March, 1888; 5 years.

Claim.—1st. A loom temple consisting of a plate and spring tongue secured flatwise together at one end, the plate having a ridge lengthwise of the tongue, and the tongue having an inclined tooth laterally of the ridge and bearing against the plate, substantially as and for the purpose set forth. 2nd. The combination, with the plate A, having a ridge a along a recessed edge, and provided with slots A' and stud C, of the spring tongue B pivoted at one end to the plate, the other end crossing the ridge a and provided with an inclined tooth b, bearing against the plate laterally of the ridge, as set forth.

No. 28,770. Gear Wheel. (Roue d'engrenage.)

Charles H. Morgan, Buffalo, N.Y., U.S., 24th March, 1888; 5 years.

Claim.—1st. The combination, with the wheel rim having an internal flange, and the hub having an external flange, one of said flanges being provided with enlarged bolt holes, of fastening bolts secured to one of said flanges and passing through the enlarged bolt holes in the opposite flange, and elastic cushions arranged in said enlarged bolt holes, substantially as set forth. 2nd. The combination, with the wheel rim having an internal flange B, provided with enlarged bolt holes g, and a hub provided with an external flange c, on one side of the flange B, of a ring d arranged on the opposite side of the flange B, bolts H and elastic cushions G, E, F, F', interposed between the contiguous metallic surfaces, substantially as set forth. 3rd. The combination with the wheel rim, provided with an internal flange B and the hub having an external flange c, of the ring d, fastening bolts H, stay sleeves g' applied to the bolts H, and elastic packings F, F' arranged on both sides of the flange B, substantially as set forth. 4th. The combination, with the wheel rim provided with an internal flange B, having enlarged openings g, and the hub having an external flange c, of the ring d, fastening bolts H, stay sleeve g', elastic cushions G arranged in the openings g around said sleeves, and the elastic packings E, F, F', arranged between the hub and its flange, the rim flange and the ring d, substantially as set forth.

No. 28,771. Furnace Grate. (Grille de fourneau.)

James M. Smith, Detroit, Mich., U.S., 27th March, 1888; 5 years.

Claim.—1st. The combination of a series of grate bars, supported on two connected rocking frames B, B', whereby alternating and intervening grate bars are horizontally raised above, and depressed below the level of the whole, as set forth. 2nd. The combination, with the grate bars F, having legs f, f', of the rocking frames B, B', having a drop lug C and connected by rod D, and a lever for rocking said frames simultaneously, as set forth. 3rd. A grate bar F, provided with the swells G, at the middle and ends, and having legs f, f' at an unequal distance from the ends and C-shaped terminations, as set forth.

No. 28,772. Spring Motor for Sewing Machines. (Ressort moteur pour machines à coudre.)

William Naab, Wittemore, Mich., U.S., 27th March, 1888; 5 years.

Claim.—1st. The combination, with a spring motor, partially concealed within the head of the sewing machine, of a friction brake operated by a weighted brake lever secured underneath the sewing machine table and arranged to normally stop the motor, and a knee-lever to operate the brake-lever, all arranged to operate substantially as described. 2nd. The combination of a friction drum secured to the shaft of the going barrel, a brake-strap, a weighted brake-lever and a knee-lever extending horizontally and then vertically in proximity to one of the standards of the sewing machine, and an adjustable knee-pad secured to said knee-lever, substantially as described. 3rd. The combination, with the weighted brake-lever I, of the knee-levers K extending horizontally underneath the brake-lever, and then vertically downward in proximity with one of the side frames of the sewing machine, and an adjustable knee-pad I', arranged and operating substantially in the manner described. 4th. The combination of the motor spring B and train gear, the friction drum G, friction strap H, weighted brake-lever I and knee-lever K, all arranged and operating substantially as described.

No. 28,773. Pulp Beating Engine. (Cylindre broyeur à pâte à papier.)

Joshua Norton, Jr., Portneuf, Que., 27th March, 1888; 5 years.

Claim.—1st. In a beating engine, having its roll at or near the top, the combination of a vertical tub and a vertical longitudinal division, round which the material circulates, substantially as and for the purposes described. 2nd. In a beating engine, the combination, with the vertical tub and the roll, of a combined vertical bed and mid feather D, all as herein set forth and for the purposes described. 3rd. In a beating engine, the combination, with a vertical tub, of screen E formed on side of same, as and for the purposes set forth. 4th. In a beating engine, the combination, with a vertical tub, of the stirrer G, as and for the purposes described.

No. 28,774. Straw Burning Stove. (Poêle consommant la paille.)

Fred Girtanner, Big Stone, Dak., U.S., 27th March, 1888; 5 years.

Claim.—1st. The straw burning stove having the main portion A, the fire-box extending therefrom and communicating therewith, the horizontal diaphragm G arranged in the portion A and dividing the same into an upper and lower compartment, said diaphragm having the opening at its rear corners communicating with the said compartments, the vertical longitudinal diaphragm K dividing the lower compartment into horizontal flues L and M, the damper N at the front end of one of the said flues, the damper R₂ in the front end of diaphragm G at the centre thereof, the top of the stove being provided with the escape flue or opening S, arranged directly above the damper R₂, substantially as described. 2nd. A straw burning stove having the main portion A provided in its lower side with the longitudinal flues L and M, the chamber I arranged above the said flues and communicating with the rear ends thereof, the escape opening in the upper end of the stove, to communicate with the stove pipe, the damper R₂, in the bottom of the chamber I, directly below the escape opening, the fire box arranged on the front side of the main portion A and communicating with the flues L and M, the feeding drum arranged on the upper side of the fire-box, the slide in the lower side thereof, the removable ash-pan arranged under the fire-box, and the damper N arranged at the front end of one of the flues, for the purpose set forth as described.

No. 28,775. Sectional Boiler for Heating purposes. (Chaudière en sections de calorifère.)

George Guest, Toronto, Ont., 27th March, 1888; 5 years.

Claim.—1st. A boiler having two sides formed of a series of hollow compartments properly jointed together, each compartment forming a head for a series of tubes, which are screwed into, or otherwise fixed to the compartments and arranged in relation to the fire pot in such a manner that, while connecting the compartments forming the sides of the furnace, the expansion and contraction of the tubes will not twist or injuriously affect the compartments forming the said sides, substantially as and for the purpose specified. 2nd. The compartments A arranged one above the other and connected by water-legs G, the joints between the compartments being formed on their outer edges so as to have a space j between each compartment, substantially as and for the purpose specified. 3rd. The compartments A arranged one above the other and connected by water-legs G, in combination with the tubes D, each connected at one end with one of the compartments, and plugged or otherwise closed at its other end, substantially as and for the purpose specified. 4th. The compartments A arranged one above the other and connected by water-legs G, in combination with the tubes D, each connected at one end with one of the compartments, and plugged or otherwise closed at its other end, a horizontal partition J, with an opening K through it, being placed in each tube, substantially as and for the purpose specified. 5th. The compartments A arranged one above the other and connected by water-legs G, in combination with the tubes D, each connected at one end with one of the compartments and plugged or otherwise closed at its other end, tubes I arranged to connect the compartments A with a water-leg H, substantially as and for the purpose specified. 6th. The compartments A arranged one above the other and connected by water-legs G, in combination with the tubes D, each connected at one end with one of the compartments, and plugged or otherwise closed at its other end, and deflecting plates M, substantially as and for the purpose specified.

No. 28,776. Gate. (Barrière.)

James Chaffin, Ripon, Wis., U.S., 27th March, 1888; 5 years.

Claim.—1st. The combination, with the gate and post A, of the angular screw-threaded support D, the rod or tube E and collars f, f', provided with set-screws g, g, as and for the purpose set forth. 2nd. The combination, with the gate provided with the hinges e, e, angular brace-bar m and angular latch h, of the tubular support E, angular screw-threaded support D, collars f, f', provided with set-screws g, g, the staple d, the whole adapted to operate as and for the purpose specified.

No. 28,777. Jar Fastener. (Monture de jarre.)

Tomas B. Howe, Scranton, Penn., U.S., 27th March, 1888; 5 years.

Claim.—1st. The combination, with the jar of a bail passing over its top having the convolutions or coils at its ends, fitting within recesses or sockets on the jar and constituting the pivotal bearings of the bail, substantially as described. 2nd. The combination, with the jar formed with the open recesses or sockets in its sides, of a bail passing over the top of the jar having convolutions or coils thereon, fitting within said open recesses or sockets and constituting pivots on which the bail swings, substantially as described. 3rd. The combination, with the jar, of a bail passing over its top having convolutions or coils thereon, some of which fit within bearings on the jar and constitute the pivotal bearings for the bail, the other portion of which are outside of said bearings on the jar for giving the required

amount of spring to the bail, as set forth. 4th. The combination, with the jar, of a bail passing over its top having convolutions or coils thereon, fitting within bearings on the jar and constituting the pivotal bearings for the bail, the side portions of the bail above said bearings being formed into substantially S-shape, as set forth. 5th. In a jar fastener, the combination, with the bail passing over the top of the jar having the convolutions or coils at its lower ends, of bearings on the jar for said convolutions or coils, standing above its general surface and consisting of the straight surfaces at right angles to the jar body and the sloping outer surfaces, substantially as described.

No. 28,778. Fire-Escape.

(*Sauveteur d'incendie.*)

Arthur W. Covell, Lombardy, Ont., 27th March, 1888; 5 years.

Claim.—1st. A ladder constructed of sectional sides A, rungs B and having sectional hand rails D, with or without feet Dr, substantially as set forth. 2nd. A sectional folding ladder provided with sectional or folding hand rails D, as and for the purpose set forth. 3rd. The combination of the hand rail sections D with the sides of the ladder sections A, A, as set forth.

No. 28,779. Store Service System or Cash-Carrier.

(*Mode de service des magasins ou transporte-monnaie.*)

Ephraim Hambuger, Detroit, Mich., U.S., 27th March, 1888; 5 years.

Claim.—1st. In a store service apparatus, the combination, with a hanger, of a cross-bar secured thereon, laterally projecting guide-rods on said cross-bar, coil springs sleeved upon said guide-rods, a cross-head adapted to slide upon said guide-rods and to be reciprocated thereon, a catch centrally hinged to said cross-head, a lever adapted to engage with said catch, and the stop adapted to release the lever from engagement with the lever, substantially as described. 2nd. In a store service apparatus, the combination of a spring motor consisting essentially of two springs sleeved upon guide-rods, a cross-head movable upon said guide-rods and provided with spring jaws, a lever adapted to move said cross-head and thereby compress these springs, a single wire track and a catch upon said track adapted to automatically disengage the lever and cross-head, as and for the purpose specified. 3rd. In a store service apparatus, the combination, with the hanger and the track B secured at one end thereto, of the stop J on said track and having an incline K, a spring pressed cross-head, a catch G carried thereby, and the lever fulcrumed on the hanger and disengaging said catch, substantially as and for the purpose specified.

No. 28,780. Dental Syringe.

(*Seringue dentaire.*)

William H. Richards, Knoxville, Tenn., U.S., 27th March, 1888; 5 years.

Claim.—1st. In a syringe, the combination of the cylinder, the discharge tube C projecting from the cylinder and communicating with the interior thereof, the reciprocating tube e surrounding the discharge tube and extending into the cylinder, the piston attached to the inner end of the tube e and fitting in the cylinder, and the arm e' depending from the outer end of the tube e, substantially as described. 2nd. In a syringe, the combination of the cylinder having the pistol handle A, the discharge tube extending through the cylinder projecting from the same and communicating with the interior thereof, the outer portion of the discharge tube having graduations F, the sliding tube e surrounding the discharge tube and extending into the cylinder, and provided with the piston, the arms e' depending from the outer end of the tube e, substantially as described. 3rd. In a syringe, the combination, with the discharge tube, of the discharge point bent laterally at its discharge end, the finger plate d secured over said bent portion of the cap d' on the bent portion, and having its concavity, the discharge end and the cone-shaped soft rubber block, all constructed and arranged substantially as and for the purpose specified. 4th. In a syringe, the combination, with the discharge tube, of the detachable discharge point fitted to the tube and communicating therewith, and adapted to turn axially on the discharge tube, the end of the discharge point being bent laterally to one side, whereby the discharge point may be turned to present the bent end in any direction, and the rubber tapering block fitted upon the bent end of the discharge point, the smaller end of the rubber block terminating at a slight distance above the end of the point, as set forth.

No. 28,781. Method of, and Apparatus for Synchronizing or Regulating the Movements of Motors and other Rotating Bodies.

(*Mode et appareil de synchronisation du mouvement des moteurs et autres corps tournants.*)

James H. Rogers, Bladensburg, Md., U.S., 27th March, 1888; 5 years.

Claim.—1st. The method of securing the substantial uniform rotation of a rotary motor or body, which consists in providing a visual manifestation of substantially the character described, which will vary or deviate from a normal or initial point, according to the departure from uniform rate of rotation, and adjusting the contacts of said motor by reference to said deviation, substantially in the manner and for the purposes hereinbefore set forth. 2nd. The combination, with the shaft of a rotary motor, a brush operated thereby, and an insulated segment with which the brush makes contact intermittently, of an electro-magnet in circuit with the brush and segment, the said magnet being mounted on the shaft and having a mirror attached to its armature, as and for the purposes set forth. 3rd. The combination, with two rotary motors, each having a rotating brush and an insulated segment with which the brush makes intermittent contact, of an electro-magnet in circuit with both brushes and segments, the said magnet being mounted on the shaft of one of the motors and having a mirror attached to its armature, as and for the purposes set forth. 4th. The combination, with the shaft of a rotary motor, a brush operated thereby, and a segment with which the brush makes intermittent contact, said segment and brush being adjustable with reference to each other of means operated by the closure of the contact for causing a visual manifestation, whose position with reference to a normal or initial point will vary to correspond with changes in the relative position of the brush and segment, substantially as and for the purposes hereinbefore set forth. 5th. The combination, with a rotary electric motor, having a rotating brush and segment, with which the brush makes intermittent contact, of means mounted on the motor shaft for causing a visual manifestation to assume a normal position when the intervals of contact are uniform, and a lever operatively connected to the said segments, as and for the purposes set forth. 6th. The combination, with a rotary electric motor having a rotating brush, and a segment with which the brush makes intermittent contact, and means mounted on the motor shaft for causing a visual manifestation to assume a normal position when the intervals of contact are uniform, of a lever operatively connected to the said segment, and a hand or pointer attached to the said lever, the said hand pointing normally toward the said normal position, as and for the purposes set forth. 7th. In a regulating mechanism for an electric motor, a lever operatively connected, both with the contacts of the motor circuit, between the motor and the generator, and with segments on the motor shaft, from which one or more external circuits are led off, as and for the purposes set forth.

No. 28,782. Railway Track Clearing Machine.

(*Machine à nettoyer les voies de fer.*)

John F. Cotton, Halifax, N.S., 27th March, 1888; 5 years.

Claim.—The combination of plough-plates, double-toothed wheels, the spring chisels and the toggled wire brooms, substantially as and for the purpose hereinbefore set forth.

No. 28,783. Bar-Room Electrical Apparatus.

(*Appareil électrique de buvette.*)

Théodore Bélanger, Sault aux Récollets, Que., 27th March, 1888; 5 years.

Claim.—In an electric apparatus to be specially used in bar-rooms, the rod K bearing at one end one of the electric poles F, and at the other a spring M passing through the standards N, Q and box I, and having the slots J and L, also the piece S keeping the five-cont piece in place, the piece W, X, having the slip Z for electrical connection, the whole in combination with the slip Y, fixed pole G, induction coil D, guide-passage H, dial f and needle motion device m, h, n, q, r, z, all as above described and for the purposes set forth.

No. 28,784. Stopper Extractor.

(*Tire-bouchon.*)

Benjamin J. Greely, Boston, Mass., U.S., 27th March, 1888; 5 years.

Claim.—The improved stopper extractor, herein described, made of a piece of metal a, having a lengthwise groove b, and at one end a sidewise extension a', substantially as and for the purpose set forth.

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

- | | |
|---|---|
| <p>1076. D. S. RICHARDSON, 2nd and 3rd 5 years of No. 18,422, from the 14th day of January, 1888. Improvements on Radiators for Furnaces for Heating Buildings, etc., 1st March, 1888.</p> | <p>1083. J. M. EWING (assignee), 2nd 5 years of No. 16,497, from the 13th day of March, 1888. Improvements in Iron Fences, 12th March, 1888.</p> |
| <p>1077. J. A. CHISHOLM (assignee), 2nd 5 years of No. 16,449, from the 7th day of March, 1888. Improvement on Machines for Barbing Wire, 7th March, 1888.</p> | <p>1084. W. J. LLOYD, W. W. SUPPLEE and COATES WALTON, 3rd 5 years of No. 8,676, from the 25th day of April, 1888. Improvements on Lawn Mowers, 19th March, 1888.</p> |
| <p>1078. P. and A. GENDRON and L. V. DUSSEAULT, 2nd 5 years of No. 16,502, from the 15th day of March, 1888. Improvements on Vehicle Wheels, 8th March, 1888.</p> | <p>1085. A. KEENHOLTS (assignee), 2nd 5 years of No. 16,534, from the 20th day of March, 1888. Improvement in Spring Bed Bottoms, 20th March, 1888.</p> |
| <p>1079. G. W. JOHNSON, 2nd 5 years of No. 16,470, from the 8th day of March, 1888. Improvements on Steam Pumps, 8th March, 1888.</p> | <p>1086. GRIP PRINTING and PUBLISHING CO. (assignee), 2nd 5 years of No. 16,565, from the 28th day of March, 1888. Improvements on Numbering Machines, 27th March, 1888.</p> |
| <p>1080. J. A. CHISHOLM (assignee), 2nd 5 years of No. 16,496, from the 13th day of March, 1888. Improvement on Machines for Barbing Fence Wire, 9th March, 1888.</p> | <p>1087. A. B. JARDINE, 2nd 5 years of No. 16,623, from the 9th day of April, 1888. Improvements on Tire Upsetting Machine, 27th March, 1888.</p> |
| <p>1081. H. J. ALLEN and H. WETHEY, 2nd 5 years of No. 16,609, from the 4th day of April, 1888. Improvement in Compound for Mince Pies, 9th March, 1888.</p> | <p>1088. E. P. SELDEN (administrator), S. SELDEN and J. S. CRUMP, 3rd 5 years of No. 8,610, from the 30th day of March, 1888. Improvements in Stove Pipe Dampers, 27th March, 1888.</p> |
| <p>1082. F. MCKAY, 2nd 5 years of No. 16,845, from the 12th day of May, 1888. Improvements in a composition of Matter, or a Medicinal Compound for the Treatment and Cure of Salt Rheum, Ring-Worm, Chilblains, Running Sores, Itch, and all forms of Skin Diseases, 9th March, 1888.</p> | <p>1089. S. TROTT and F. A. HAMILTON, 2nd 5 years of No. 16,644, from the 11th day of April, 1888. Improvements in Submarine Telegraph Cables, 31st March, 1888.</p> |
| | <p>1090. C. H. CLUTE & CO (assignees), 2nd 5 years of No. 16,597, from the 31st day of March, 1888. Improvements on Machines for Sanding Brick Moulds, 31st March, 1888.</p> |

APRIL LIST OF TRADE MARKS.

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

3107. WM. S. KIMBALL and COMPANY, of Rochester, State of New York, U. S. A. Tobacco in all forms, including Cigars and Cigarettes. 2nd March, 1888.
3108. EDGAR THOMPSON, of Montreal, Quebec. A Cream Colored Liquid Compound for Cleaning Carpets and Plush Furniture. 3rd March, 1888.
3109. AUGUST PONHAM LIGHTHILL, of Boston, State of Massachusetts, U. S. A. Atomizers. 5th March, 1888.
3110. IHLERS & BELL, of Liverpool, Lancashire, England. Fermented Liquors and Spirits. 6th March, 1888.
3111. CHARLES WILLIAM ALLEN, of Deer Park, County of York, Ontario. General Trade Mark. 7th March, 1888.
3112. HUBERT ROOT IVES, of Montreal, Quebec. Stoves. 10th March, 1888.
3113. DAVID JOHNSON, of 52 Fitzjohns Avenue, London, England. Explosive Substances. 13th March, 1888.
3114. GRANBY RUBBER COMPANY, of Granby, County of Shefford, Quebec. Rubber Overshoes. 13th March, 1888.
3115. GRANBY RUBBER COMPANY, of Granby, County of Shefford, Quebec. Rubber Overshoes. 13th March, 1888.
3116. ROSWELL HINMAN SMITH, of St. Catharines, Ontario. Cross Cut Saws. 19th March, 1888.
3117. GEORGE and JOHN GORDON SMITH, of Inveraven, Banff, Scotland. Whisky. 19th March, 1888.
3118. J. & J. CASH, of Coventry and Kingfields, Warwickshire, England. Silk Ribbons and silk goods of all descriptions; cambric, silk and other frillings; towels of all kinds and linen and hemp goods of every description, and general textile goods. 19th March, 1888.
3119. J. & J. CASH, of Coventry and Kingfields, Warwickshire, England. Silk Ribbons and silk goods of all descriptions; cambric, silk and other frillings; towels of all kinds, and linen and hemp goods of every description, and general textile goods. 19th March, 1888.
3120. JOHN BAXTER WOOD, of Montreal, Quebec. Coffee and Preparations of Coffee in all Forms. 21st March, 1888.
3121. CHARLES F. MOTT, of Halifax, Nova Scotia. Laundry Soap, 24th March, 1888.
3122. P. D. DODS and COMPANY, of Montreal, Quebec. General Trade Mark. 24th March, 1888.
3123. HARRY TATTON SYKES, trading as SYKES, JOSEPHINE and COMPANY, of 33 Great Castle Street, London, England. Articles of Clothing, including ladies' and children's underclothing, corsets, stays, etc. 27th March, 1888.
3124. EDMUND G. BURK, trading as the NORTHUMBERLAND PAPER COMPANY, of Campbellford, Ontario. Sheathing or Building Paper or Felt. 27th March, 1888.
3125. WILLIAM GOSSAGE & SONS, of Widnes and Liverpool, Lancashire, England. Soaps of all descriptions, 28th March, 1888.

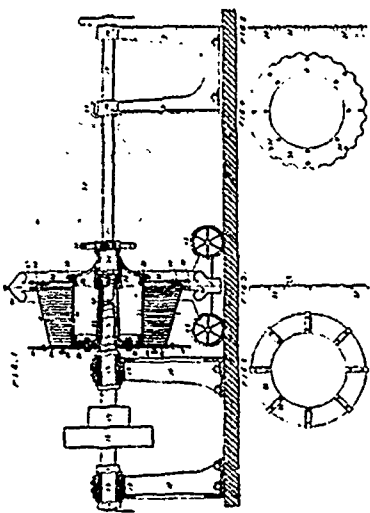
THE
CANADIAN PATENT OFFICE RECORD

ILLUSTRATIONS.

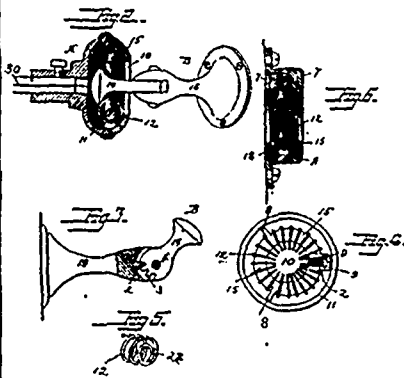
Vol. XVI.

MARCH, 1888.

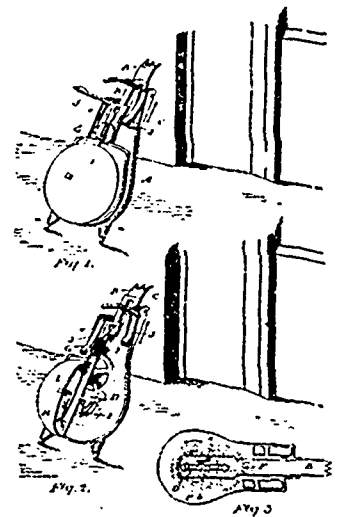
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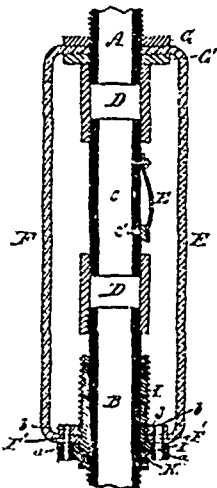
28565 Walker & Patterson's Apparatus for Moulding and Refining Sugar.



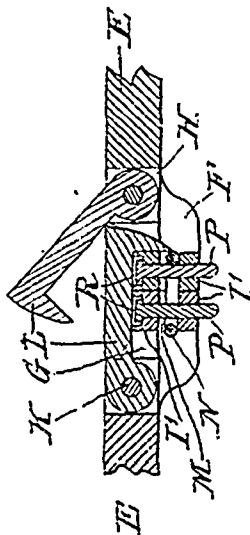
28566 Lusk's Door Check.



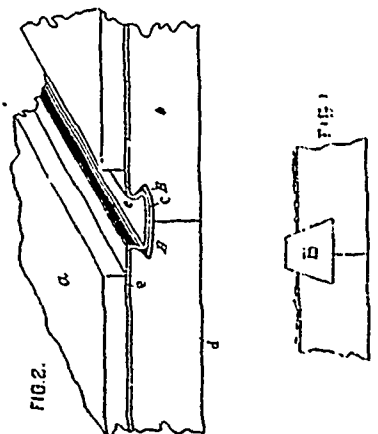
28567 Goulden & Clarke's Burglar Alarm.



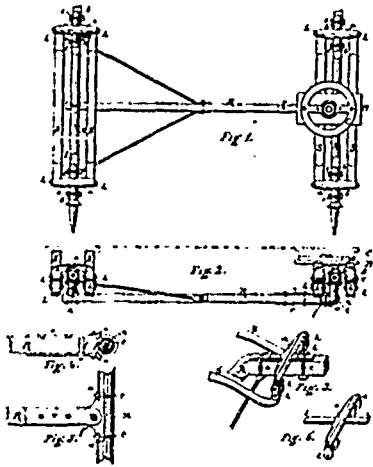
28568 Hoskins' Oil Well Pump Packer.



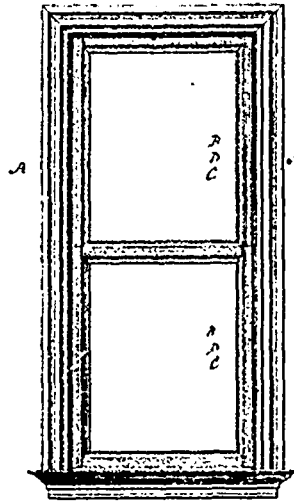
28569 Pearson's Car-Coupler.



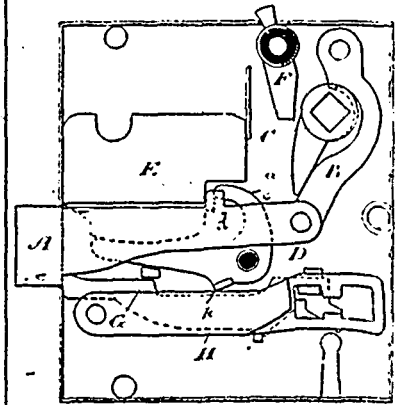
28570 Le Gros' Car Roof.



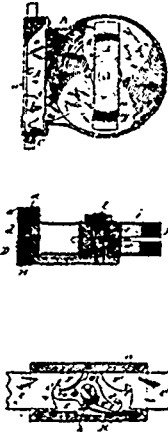
28571 Fitch's Spring Vehicle.



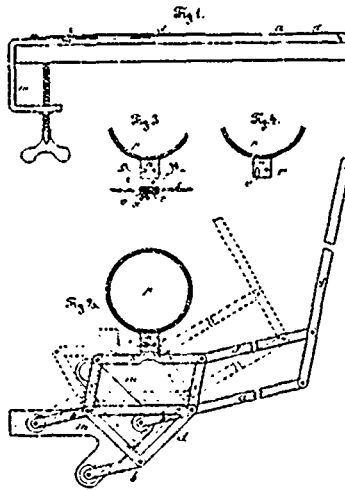
28572 Tintrop's Window.



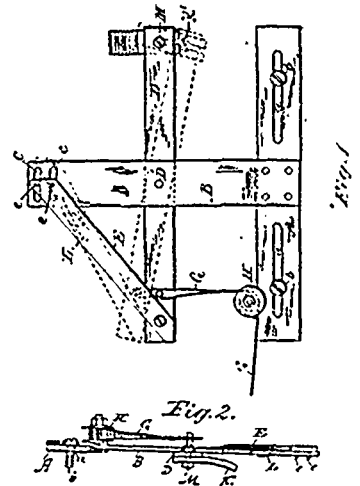
28573 Osgood's Gravity Lock.



28574 Maw's Shuttle Motions.



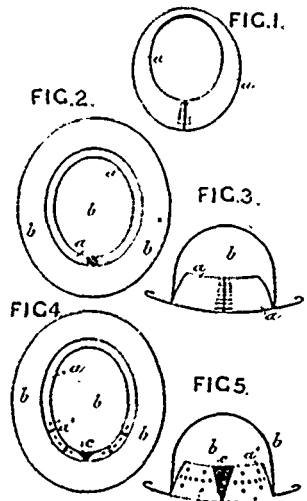
28575 Morgner's Embroidering Frame.



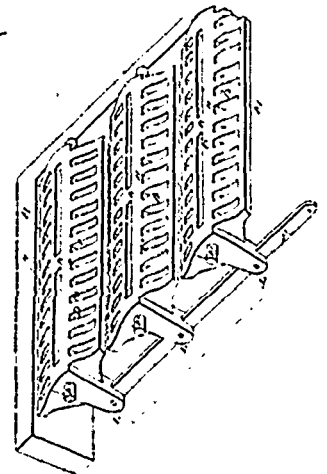
28576 Taylor's Loom Temple.



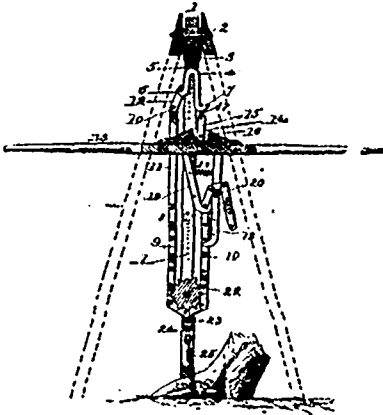
28577 Humphrey's Sock.



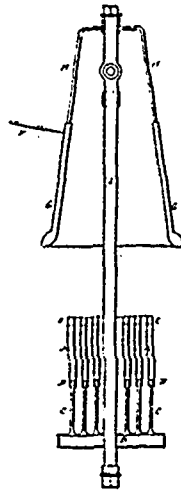
28578 Hewitt & Bent's Leather or Sweatband of Hat, etc.



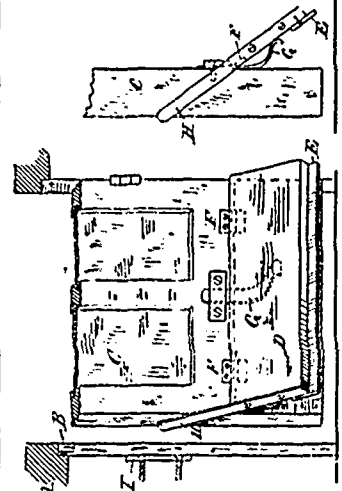
28579 Heeson's Furnace Grate.



28580 Hartrup's Stump Puller.



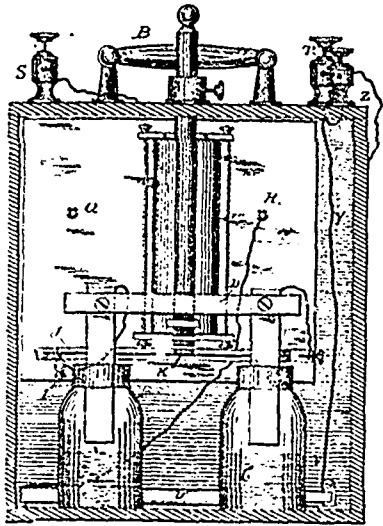
28581 Wakefield's Apparatus for Generating Gas, etc.



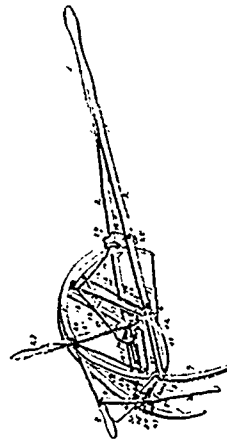
28582 Breeze's Door Weather Strip.

Fig. 2.

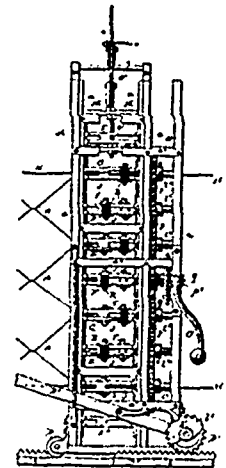
Fig. 1.



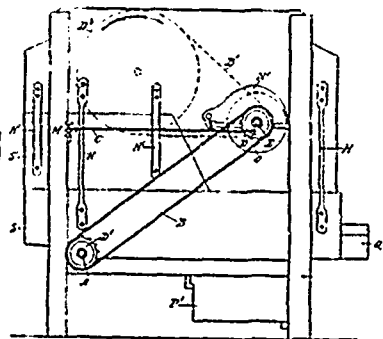
28583 Smith's Electrical Apparatus for Dental Purposes.



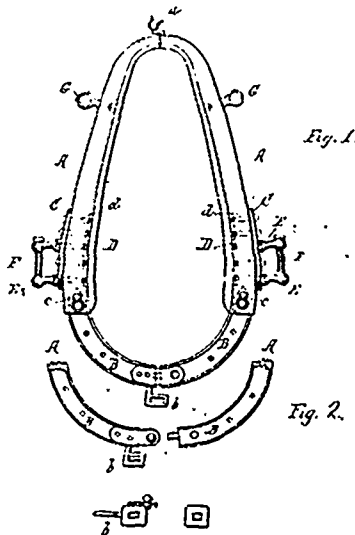
28584 Stehle's Grain Blender.



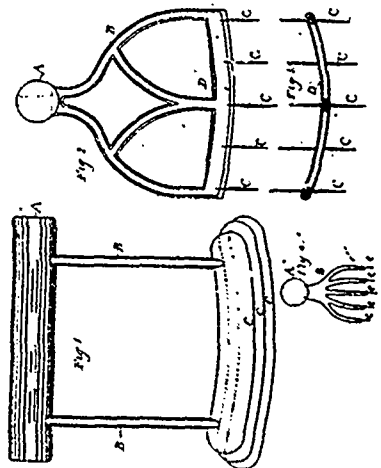
28585 Kittelman's Wire Fabric Machine.



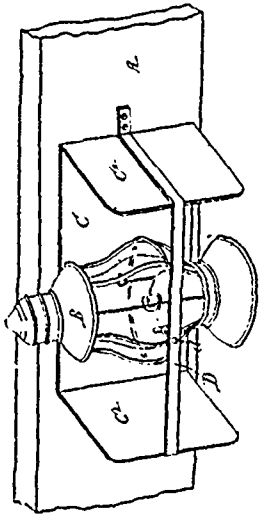
28586 Floeter's Fanning Mill.



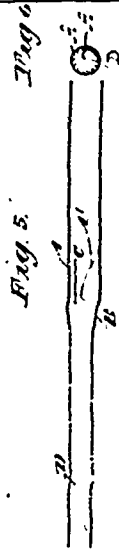
28587 Block's Horse Collar



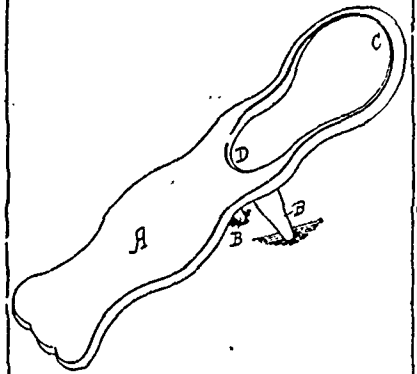
28588 Phipp's Meat Chopper.



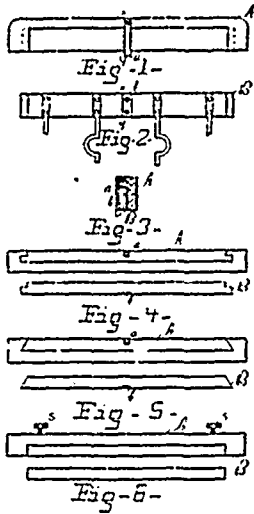
28589 Harkom's Railway Signal.



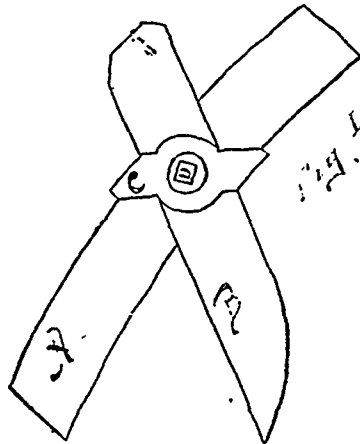
28590 Riedel's Adaptation to Cigars, etc.



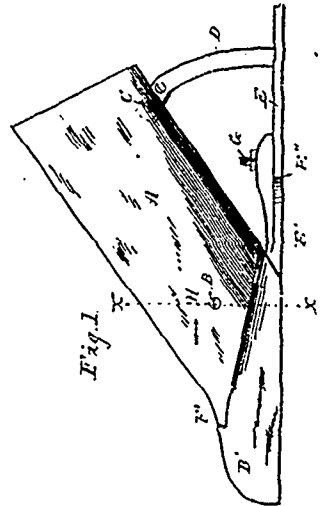
28591 Coss' Boot Jack.



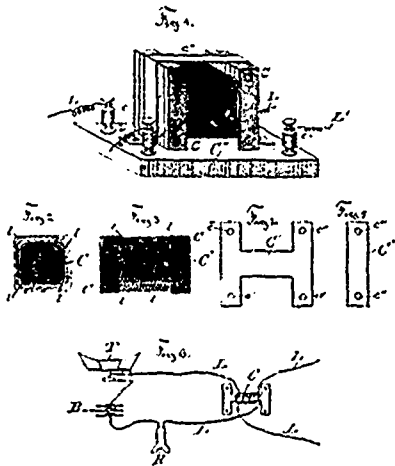
28592 Murray's Lazy-Back for Carriages, etc.



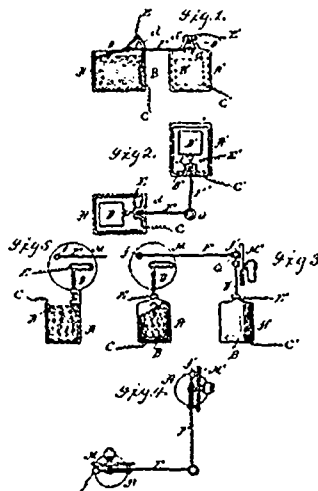
28593 Ferrin's Plough.



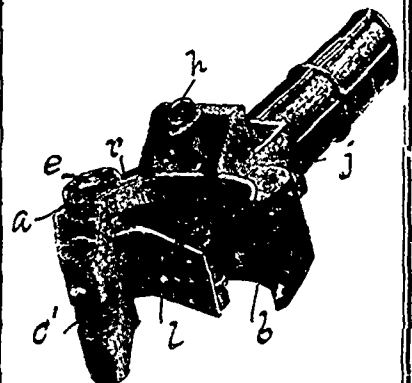
28594 Spaulding & Thistlewood's Plough Point.



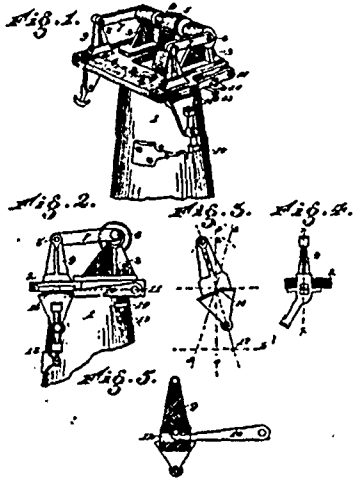
28595 Cabot & Quain's Telephone.



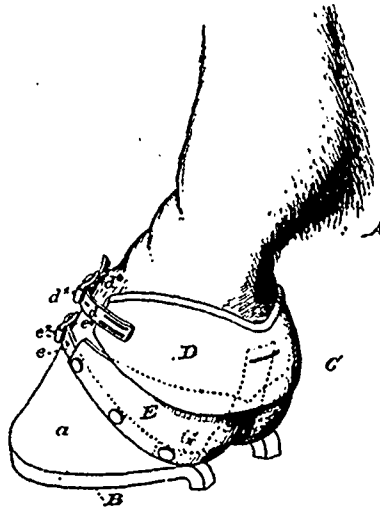
28596 Robertson's Autographic Telegraph.



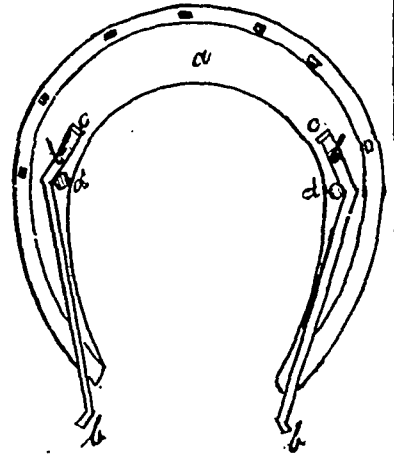
28597 Lorraino & Aubin's Car-coupling.



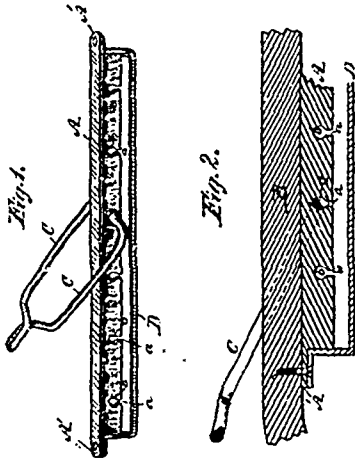
28598 Ross' Burnishing Machine.



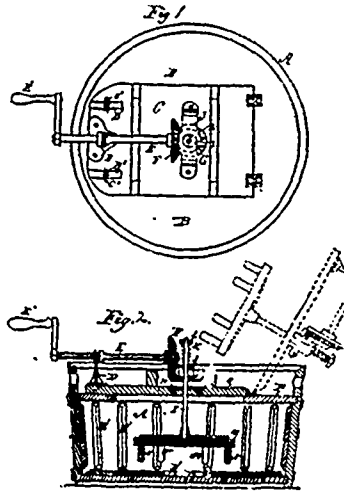
28599 Cooldge's Quarter Boot for Horses.



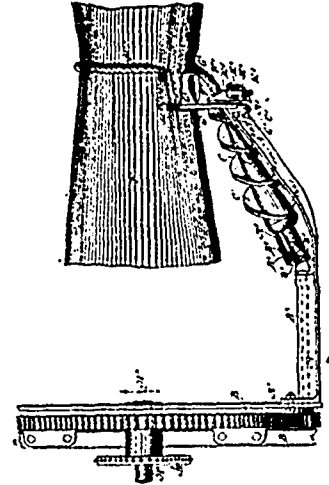
28600 Stricker's Horse Shoe.



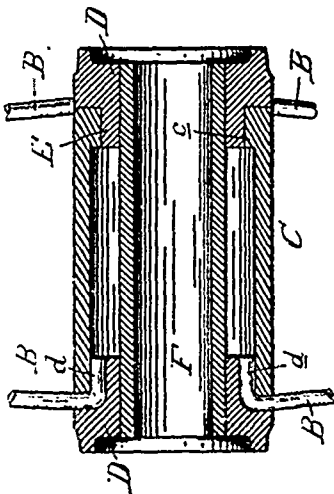
28601 Mirfield's Holdback.



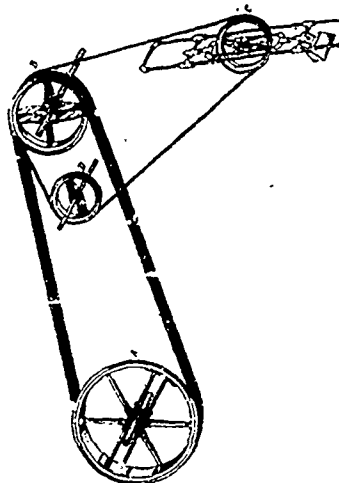
28602 Gove & Pierce's Washing Machine.



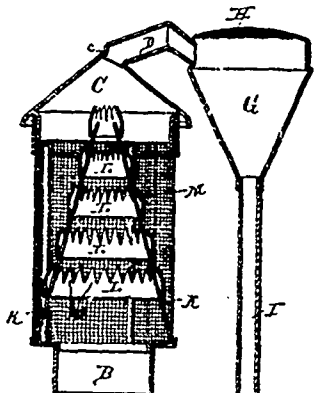
28603 Martin's Harvester Attachment.



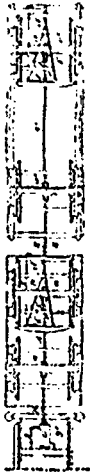
28604 Hughes' Vehicle Wheel.



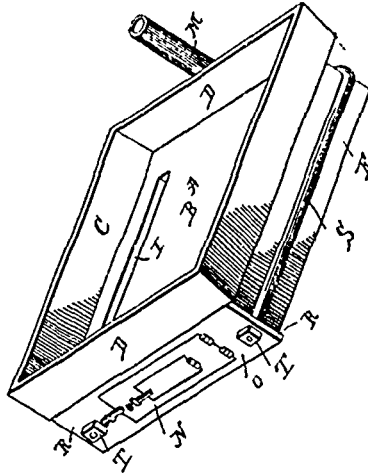
28605 Dodge's Device for Transmitting Power.



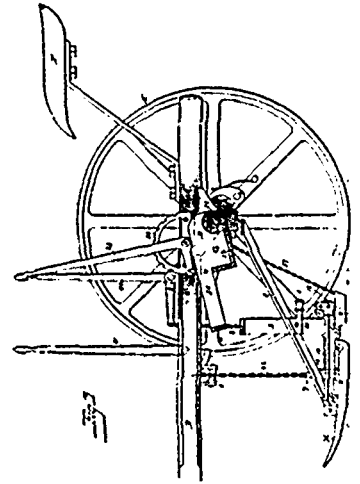
28606 Ziegler's Spark-Arrester.



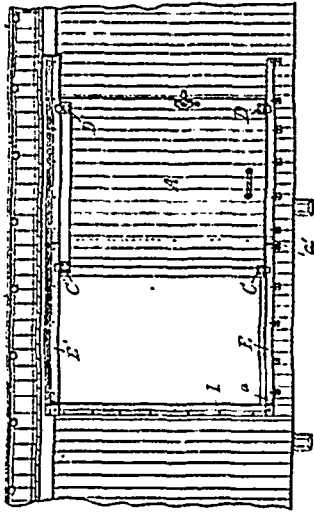
28607 Shotton & Barnes' Car Brake.



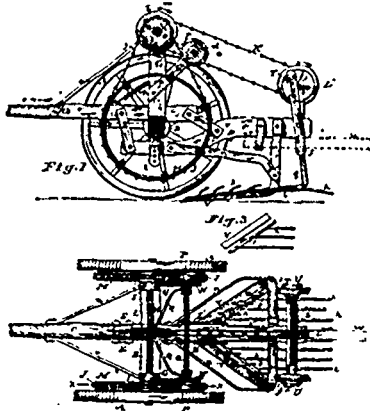
28608 Thurston's Evaporating Pan.



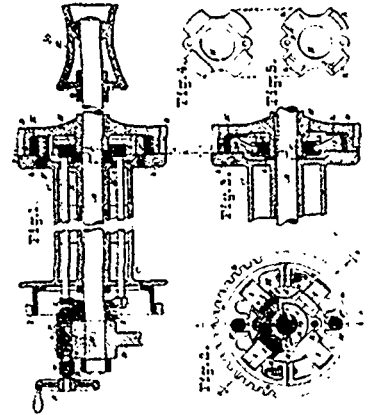
28609 Maddu's Harvester.



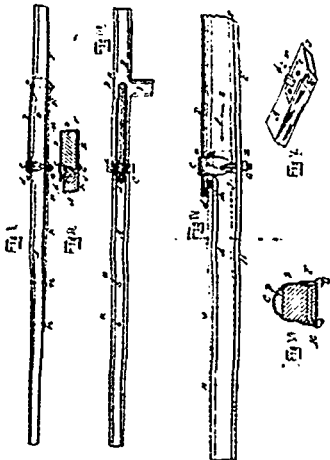
28610 Susemihl's Freight Car Door.



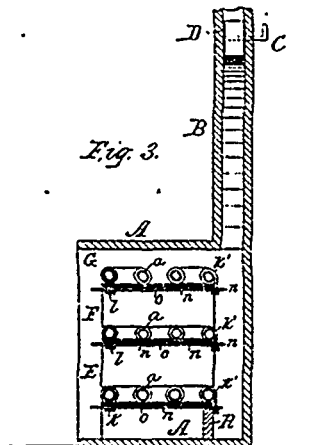
28611 Butman's Potato Digger.



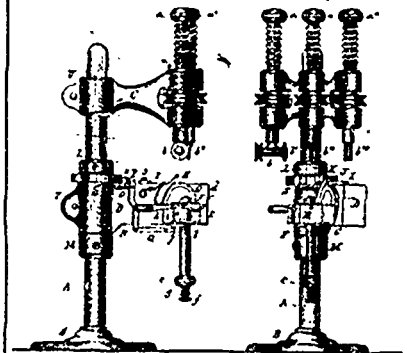
28612 Flohr's Friction-Clutch and Hoist.



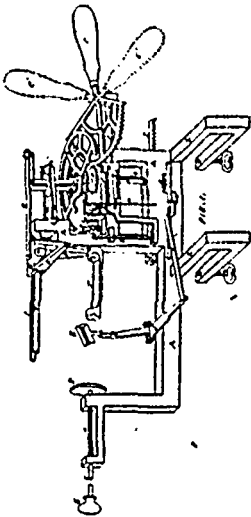
28613 Percy's Thill Equalizer.



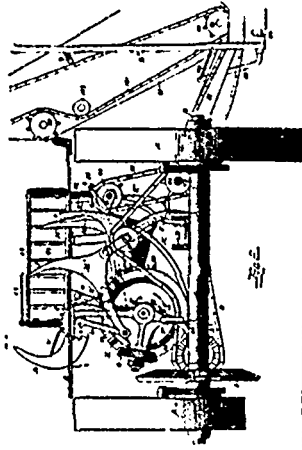
28614 Lowell's Evaporator.



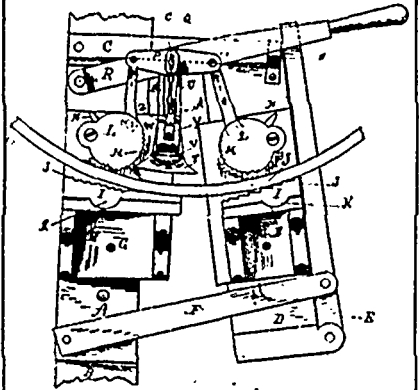
28615 Banulth's Machine for Engraving and Carving Buttons.



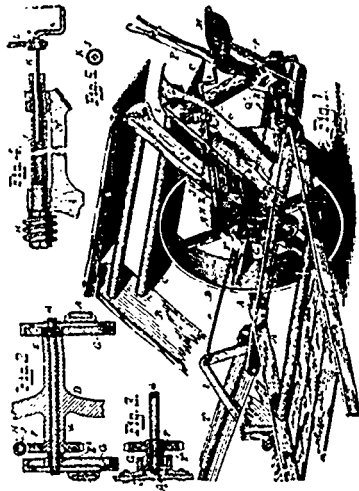
28516 Blakely's Machine for Coring, Paring and Quartering Apples.



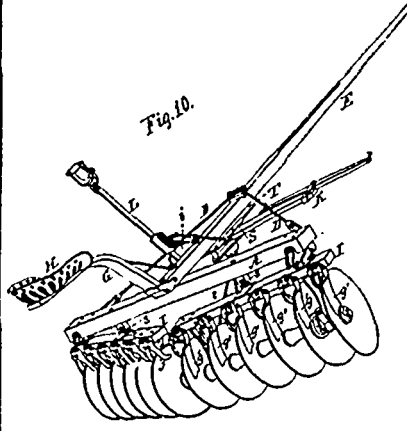
28617 Maddin's Grain Binder



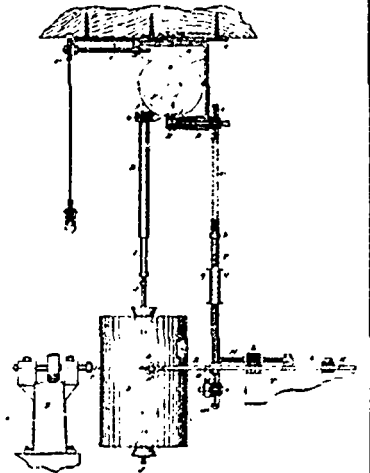
28518 Wright's Machine for Upsotting Tires.



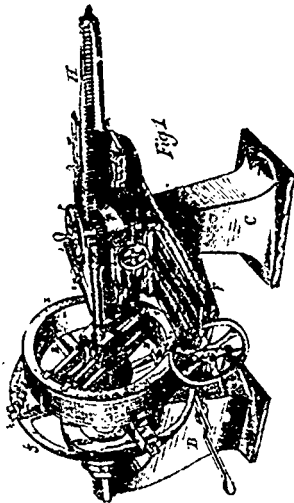
28619 Whitley's Harvester.



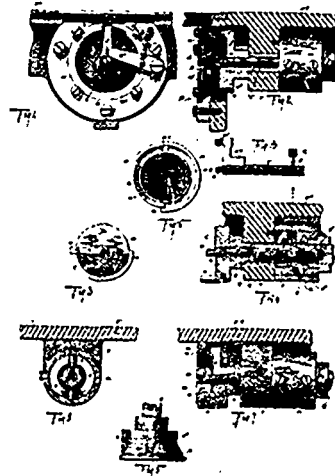
28620 Stoddard's Harrow.



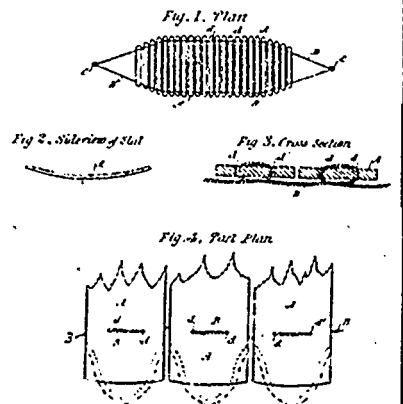
28621 Gano's Apparatus for Manufacturing Brushes.



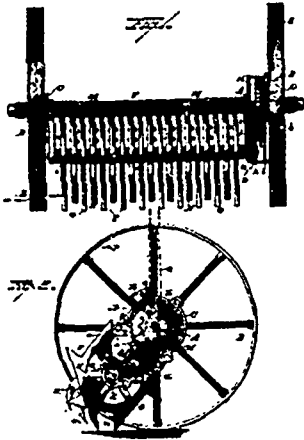
28622 Dodds's Lathes.



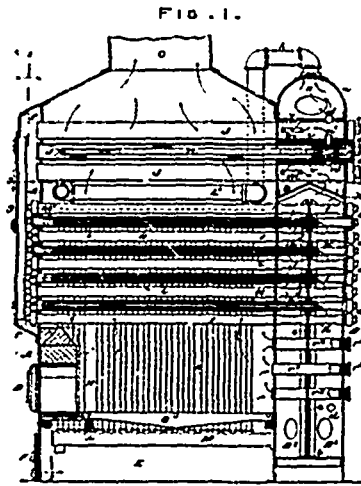
28623 Porter's Shuttle for Sewing Machines



28624 Fuller's Hammock.



28625 Lillie's Soil Pulverizer.



28626 Morrin's Steam Generator.



Fig. 1.

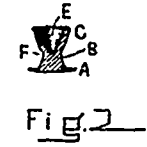


Fig. 2.

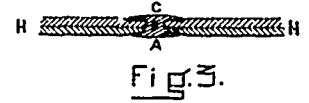
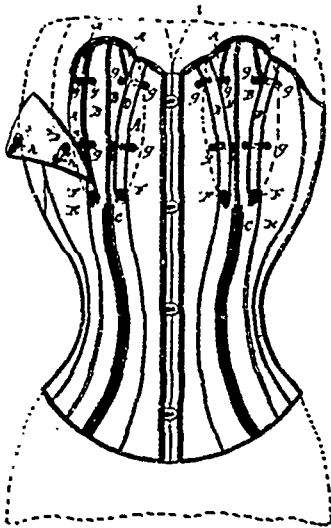
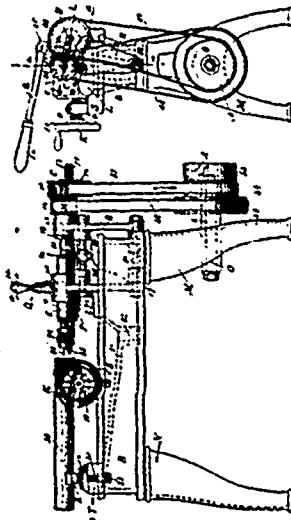


Fig. 3.

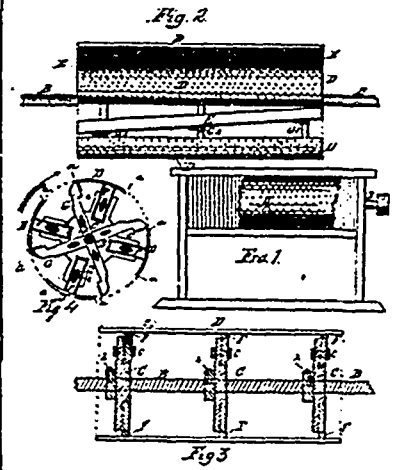
28627 Dion's Rivet.



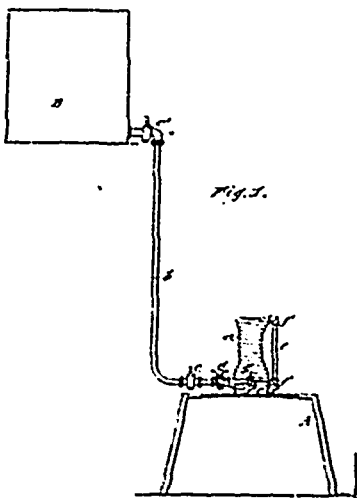
28628 Lunn's Corset.



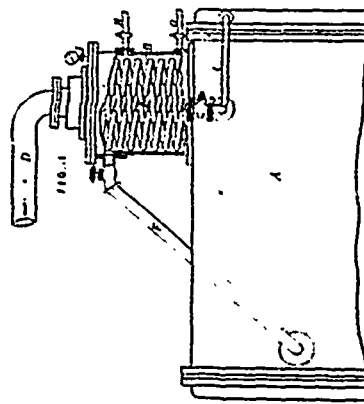
28630 Whitney's Drilling Machine.



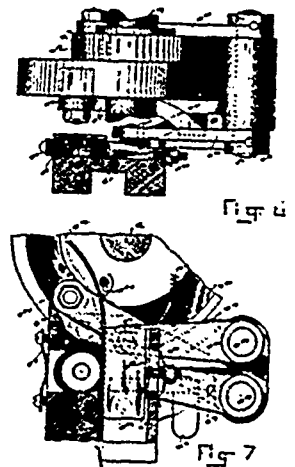
28631 Williamson's Grain Scourer.



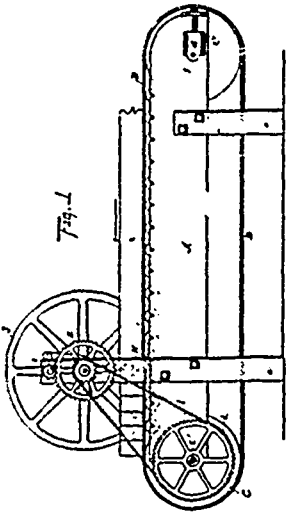
28632 Doty's Apparatus for Generating Light and Heat from Oil.



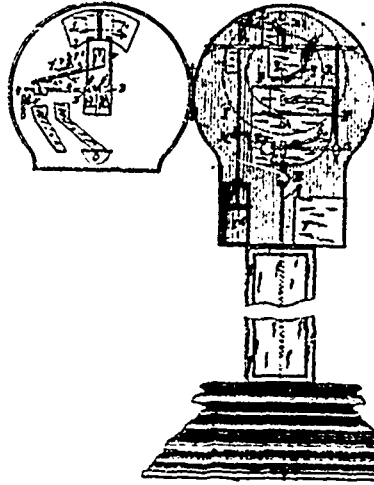
28633 Kirkaldy's Apparatus for Obtaining Pure Water.



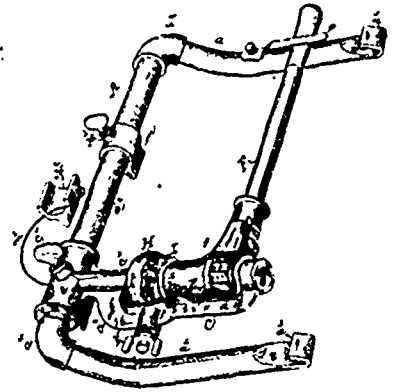
28634 Wilder's Nailing Machine



28635 Burr and Stipes' Machine for Cutting Bricks, etc.

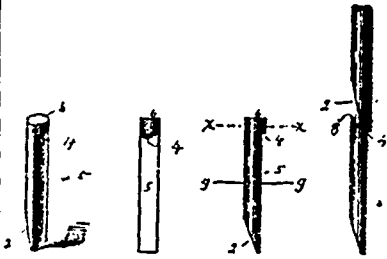


28636 Belmann's Weighing Machine.

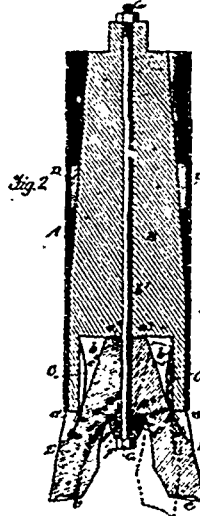


28637 Crocellus' Railway Track Drill.

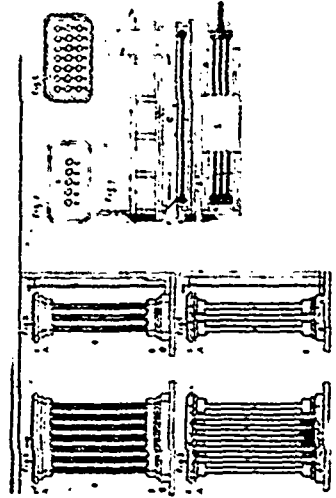
Fig. 4. Fig. 3. Fig. 2. Fig. 1



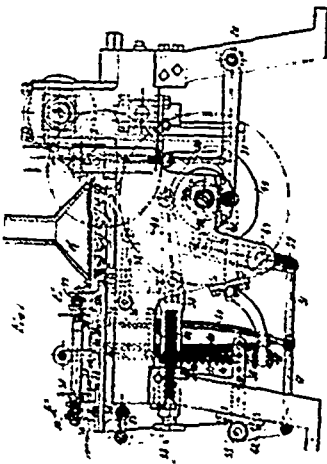
28653 Wilder's Nail.



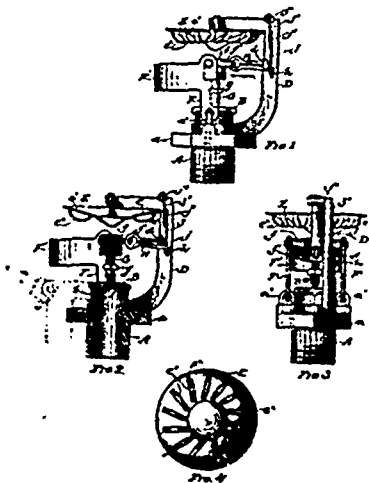
28659 Ross' Reamer.



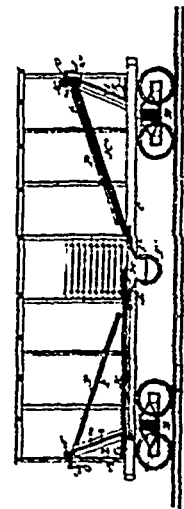
28640 Longard's Ventilator.



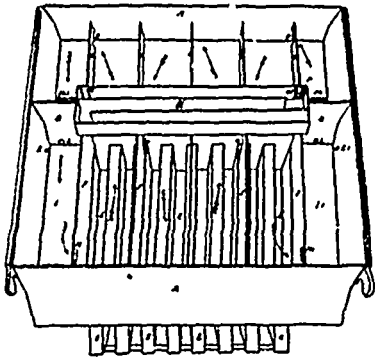
28641 Hansen's Horsehoe Nail Machinery.



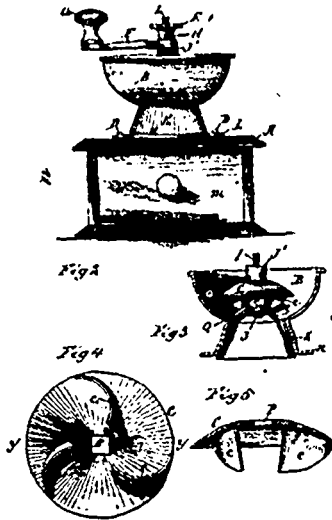
28642 Clapp's Fire-extinguisher.



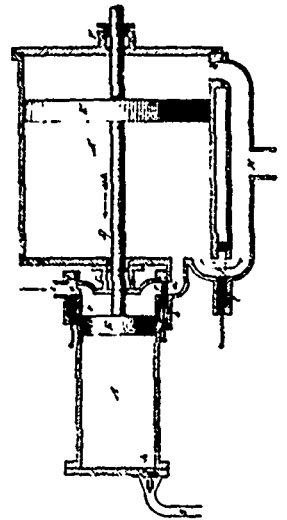
28643 Mossop's Freight Car.



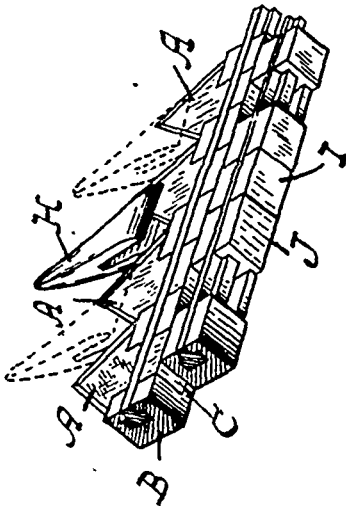
28644 Hall & Wright's Sap Evaporator.



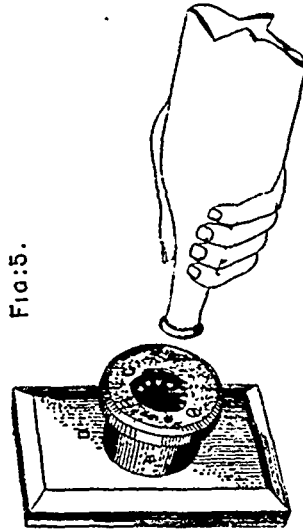
28645 Tobias' Coffee Mill.



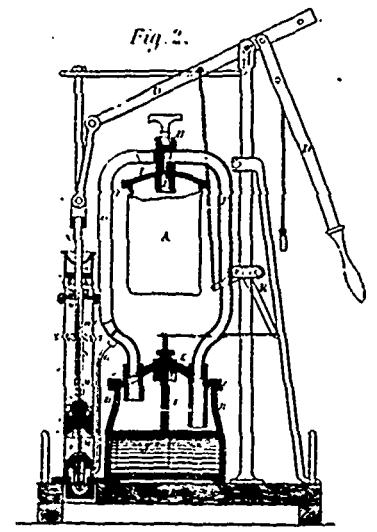
28646 Ericsson's Steam Engine.



28647 Réaume's Finger and Cutter Bar.



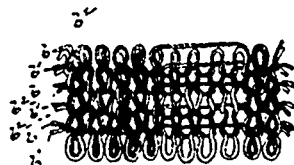
28648 Tuteur's Apparatus for Capsuling Bottles, etc.



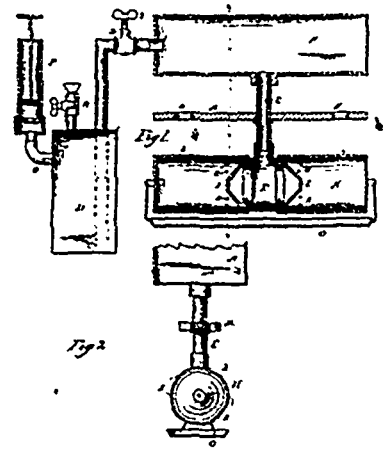
28649 Ficus' Freezing and Refrigerating Machine.



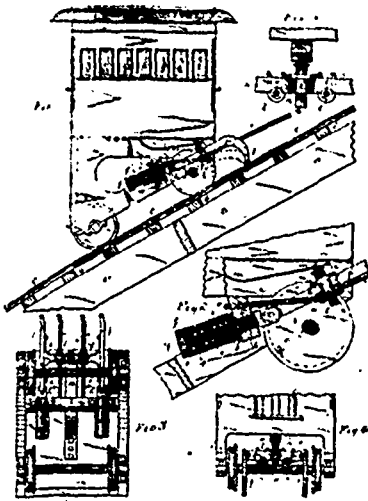
28650 Dodge & Smith's Woolen Boot.



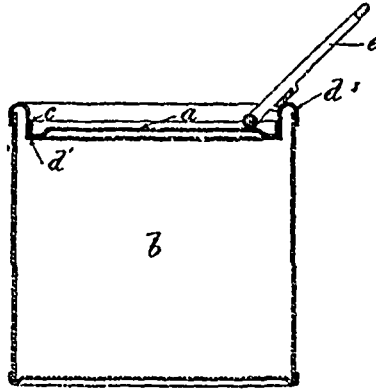
28651 Dodge & Smith's Knit Boot.



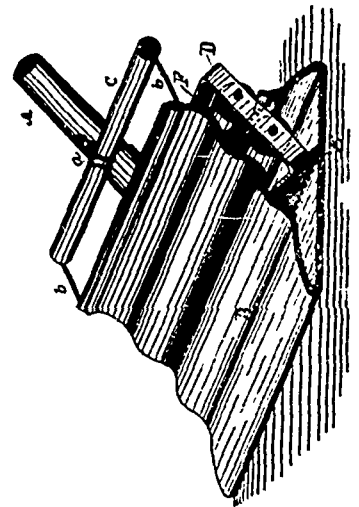
28652 Cowles' Oil Burner.



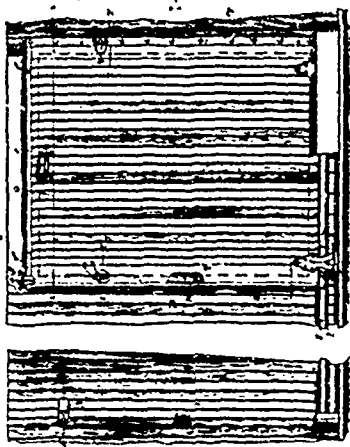
28653 Schuller's Catch for faceted Railways.



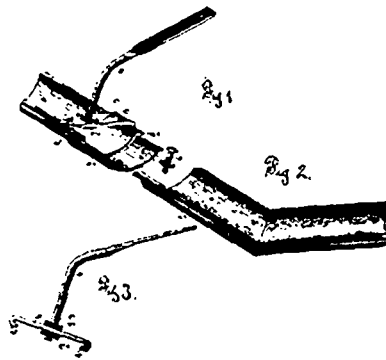
28654 Seymour's Cover for Metallic Receptacles.



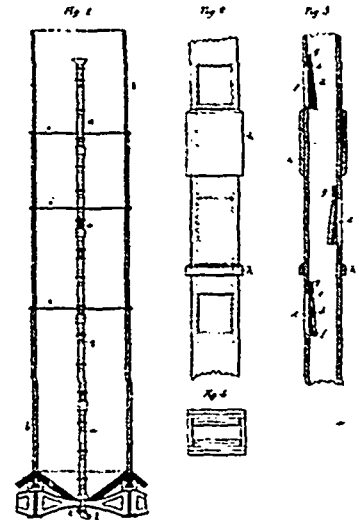
28657 Sellers' Mop Wringer.



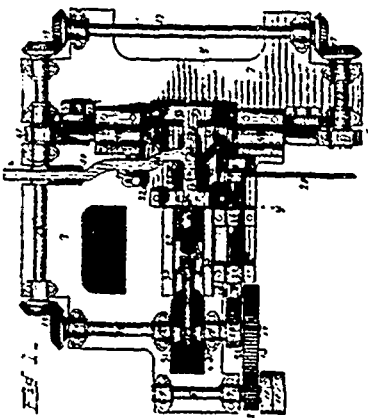
28658 Dunham's Sliding Door



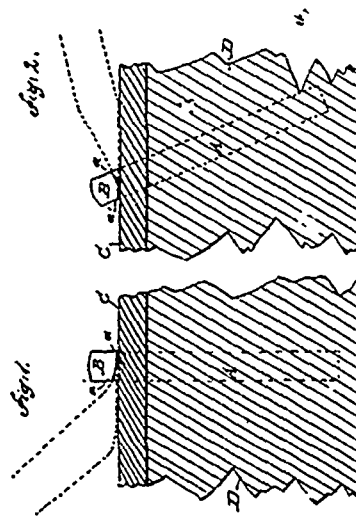
28659 Taylor's Eaves Trough.



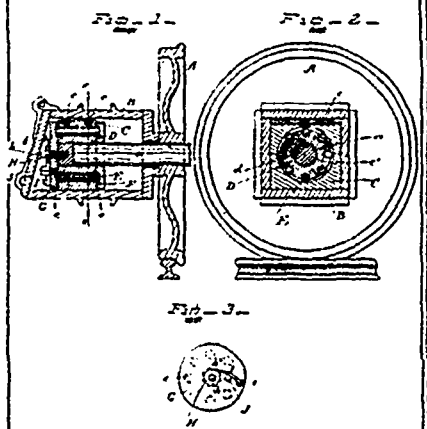
28660 Henderson's Apparatus for Drawing off Grain.



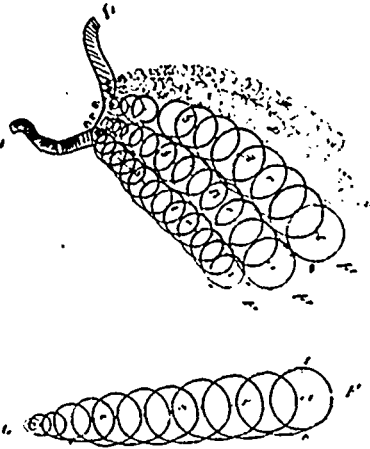
28661 Collins' Link Bending Machine.



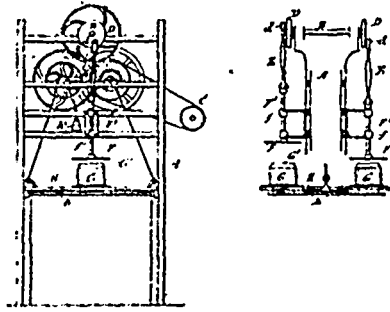
28662 Davies' Railroad Spike.



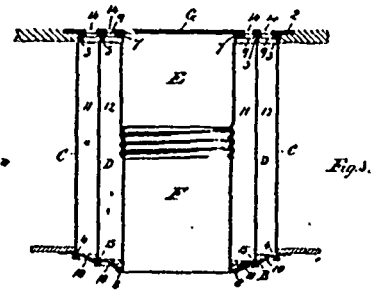
28663 Moyer & Youlls' Axle Box.



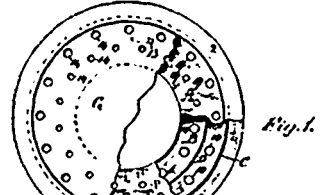
28664 Hill's Spring Bistle.



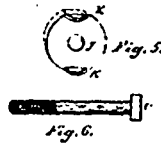
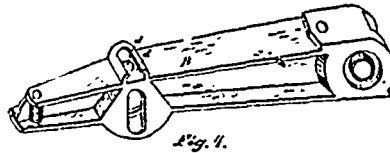
28665 McGinnis' Apparatus for Cutting Scale Boards.



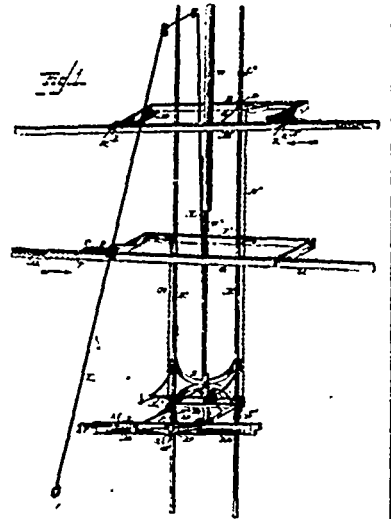
28666 Packham's Stove-Pipe Thimble.



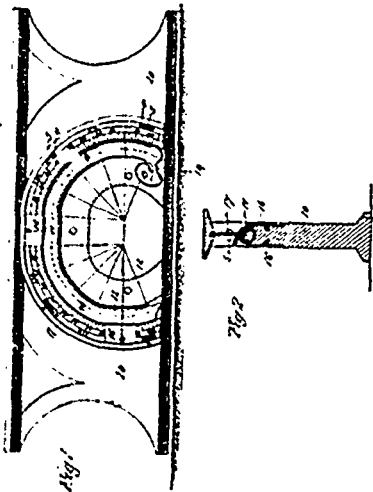
28667 Logan's Anchor for Posts.



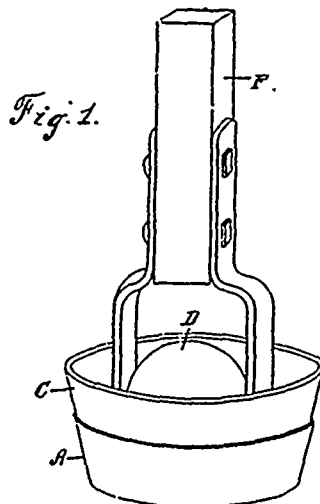
28668 Ball & Bender's Plough,



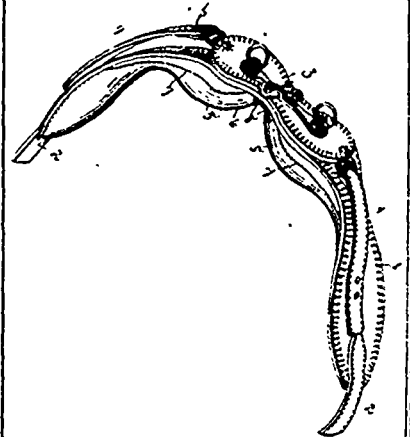
28669 Bostedo & Thomas' Cash and Package Carrier.



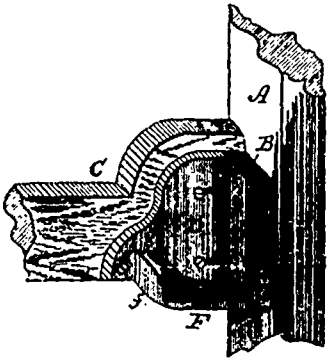
28670 St. John's Level, Plumb, etc.



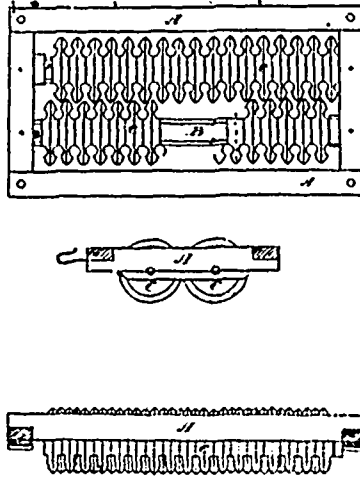
28671 Cuthbertson's Pump Bucket.



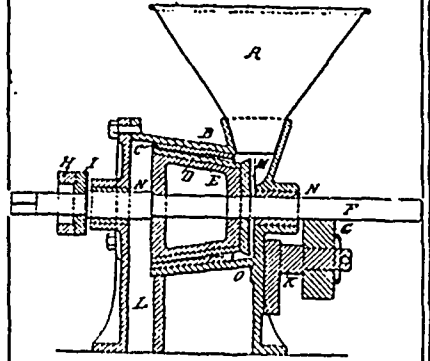
28672 Empoy's Harness Pad.



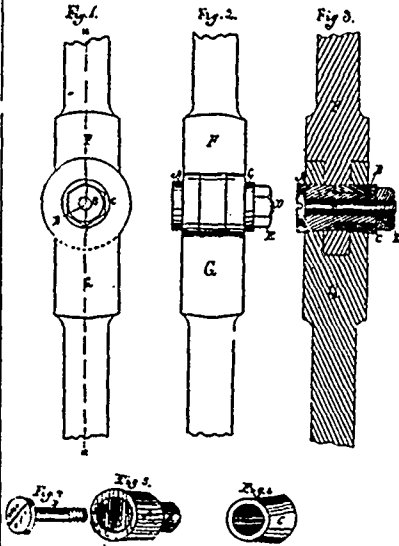
28673 Waters' Bedstead Fastening.



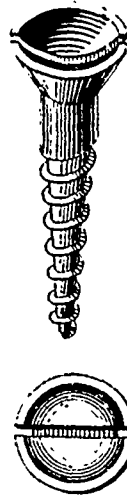
28674 Boysen's Land Roller.



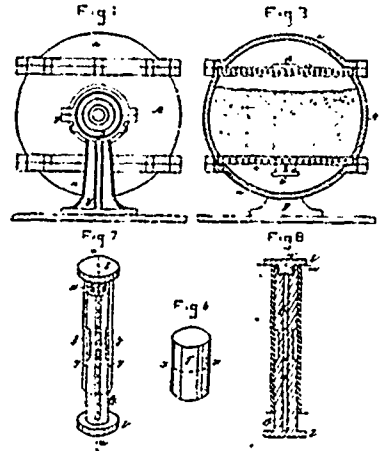
28675 Lister & Richmond's Grinding Mill.



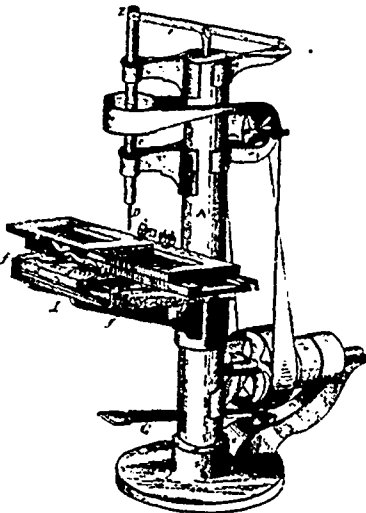
28676 McWilliam's Axial Pin and Nut.



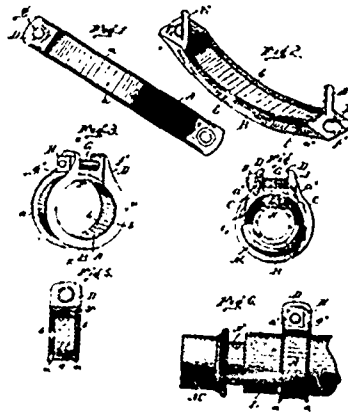
28677 Dow's Screw.



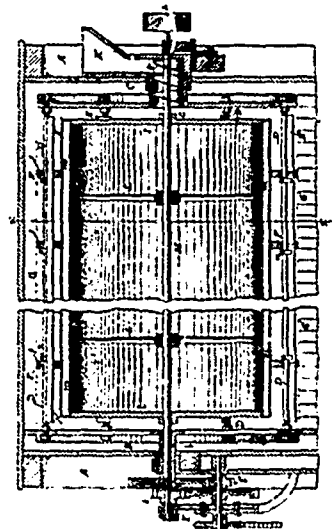
28678 Crocker's Filtering Machine.



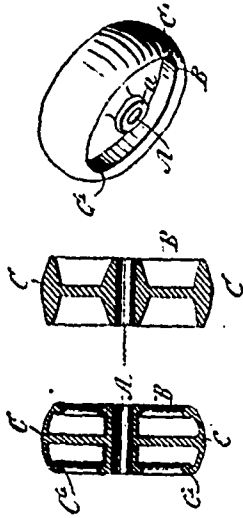
28679 McNeal's Boring Machine.



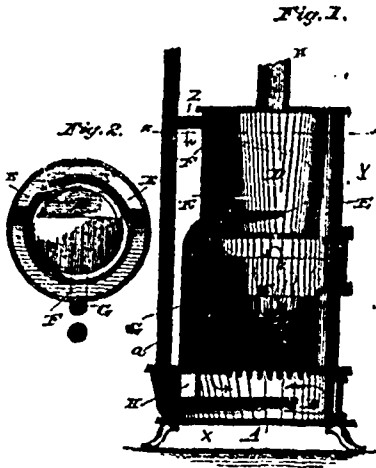
28680 Turk's Hose Coupling.



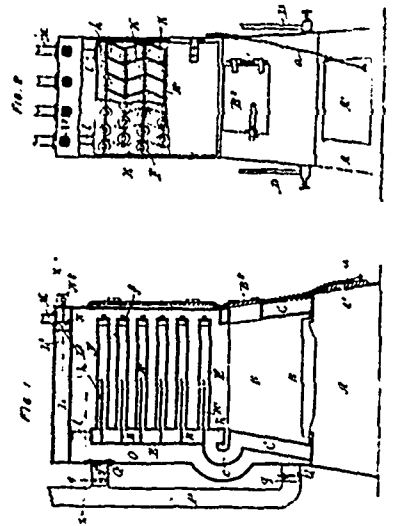
28681 Eldrod's Centrifugal Reel.



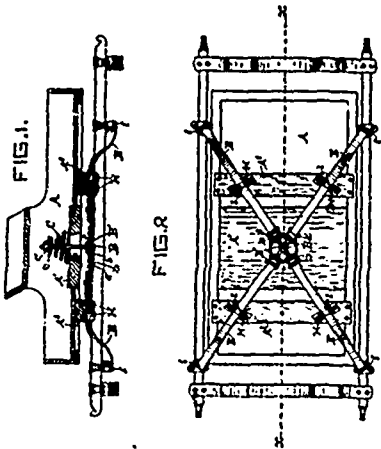
28682 Ives' Caster Wheel.



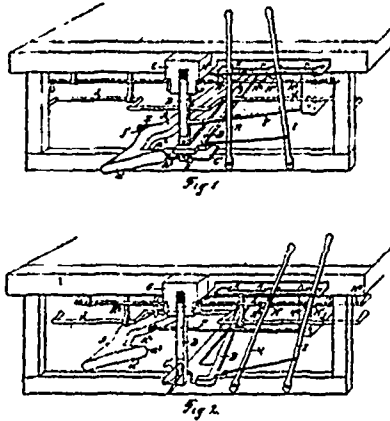
28683 Chalmers' Hot Air Stove.



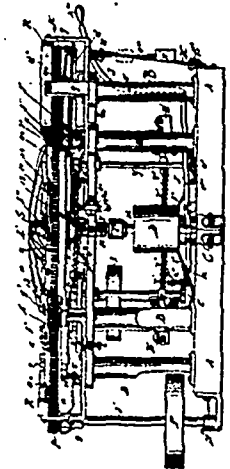
28684 Dwinell's Water Heater.



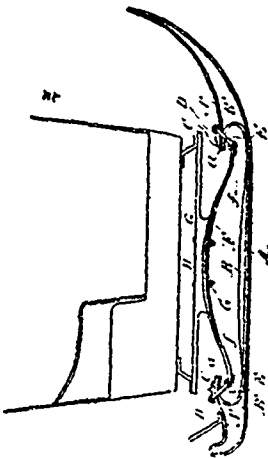
28685 Bowe's Side Bar Vehicle.



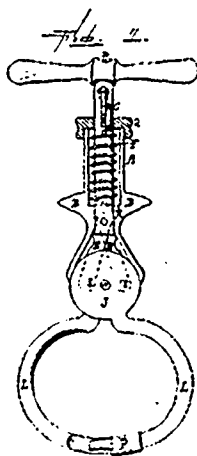
28686 DeCew's Car-Coupling.



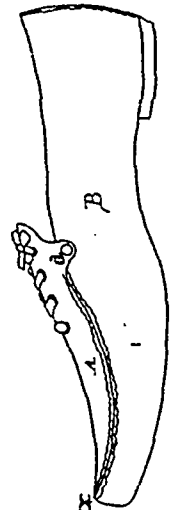
28687 O'Connor's Shingle Machine.



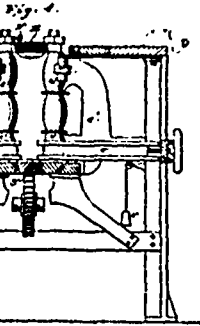
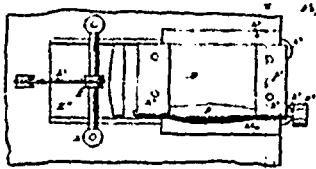
28688 Berry's Sleigh.



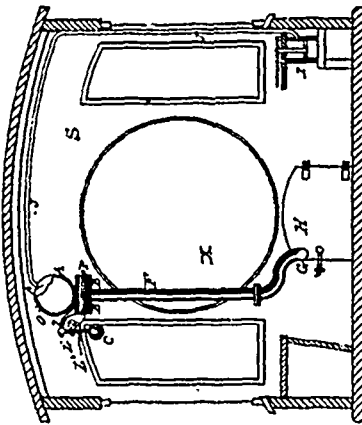
28689 Alden's Hand-Cuff.



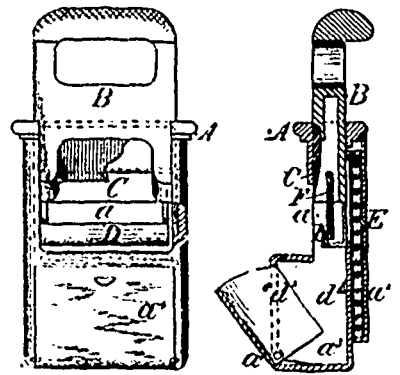
28690 Booth's Moccasin Shoe.



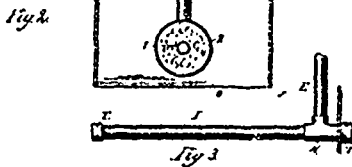
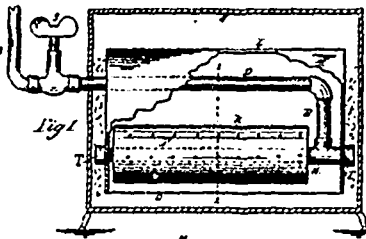
28691 Goohring's Machine for Shaping Wood



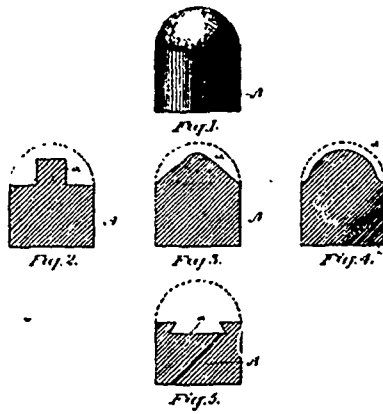
28692 Dyer's Apparatus for Extinguishing Fires.



28693 Fell's Tobacco Cutter.



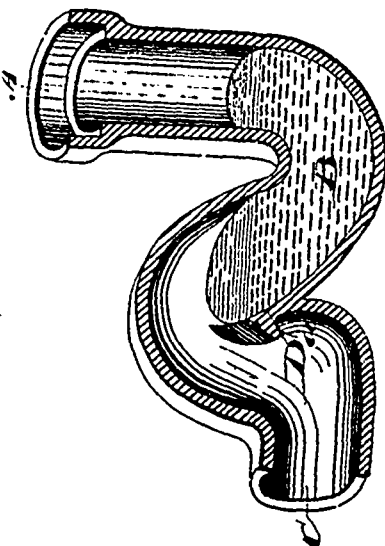
28694 Cowles' Hydrocarbon Burner.



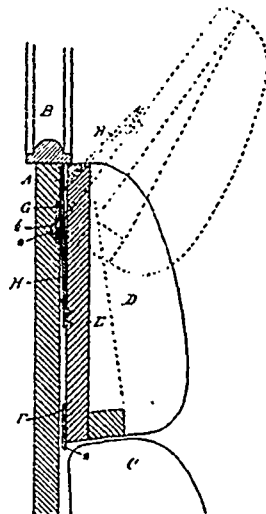
28695 Foley's Match.



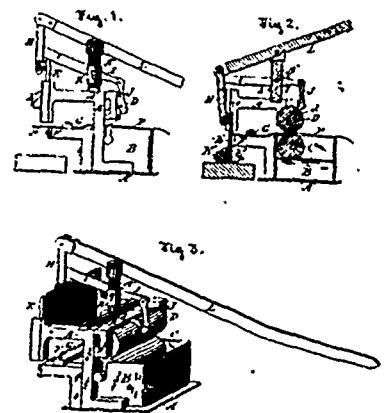
28696 Reid & Jameson's Transformation Picture and Print.



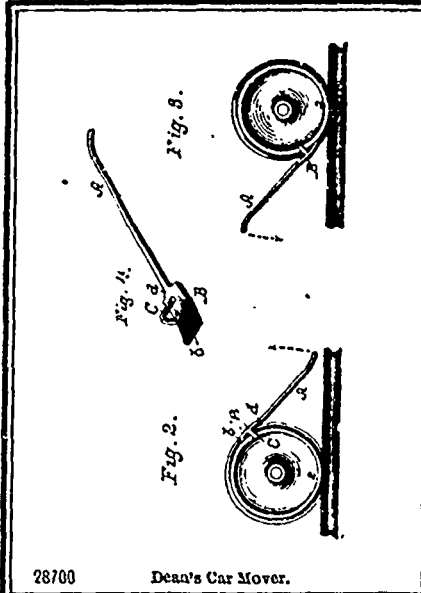
28697 Maguire's Drain Tile Trap.



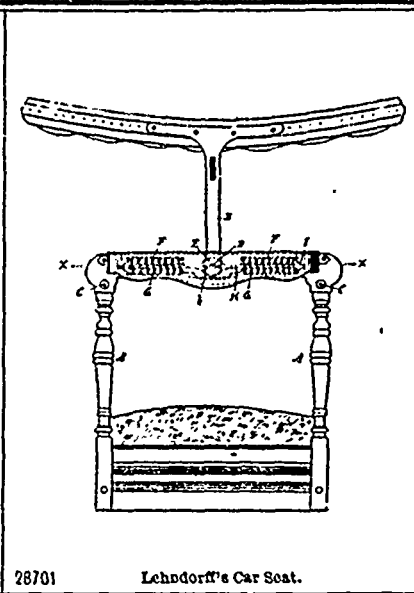
28698 Blissell's Head-Rect.



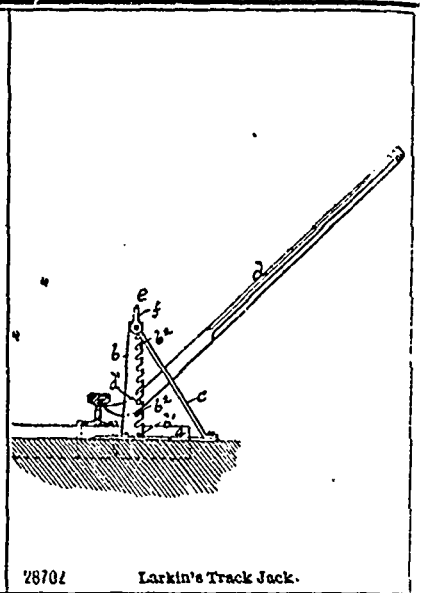
28699 Taylor's Malling Machine.



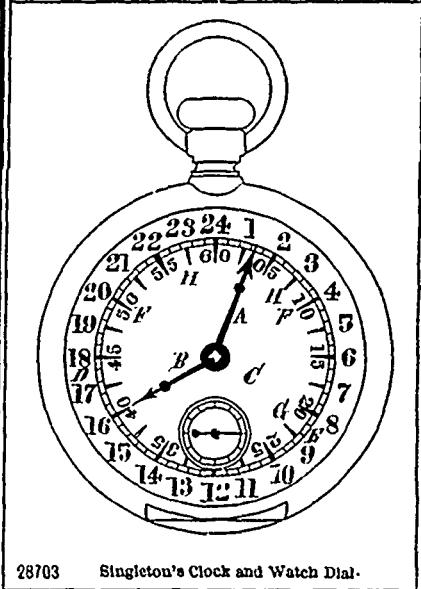
28700 Dean's Car Mover.



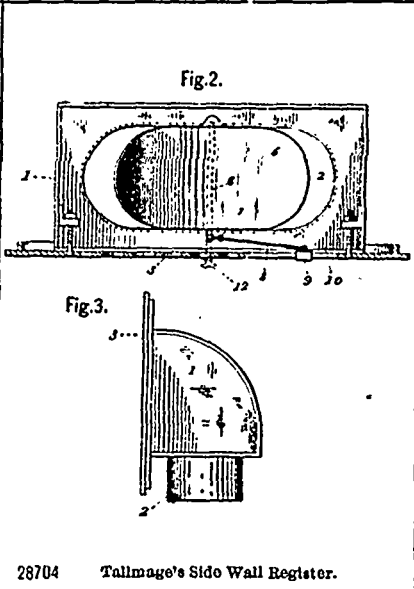
28701 Lehdorff's Car Seat.



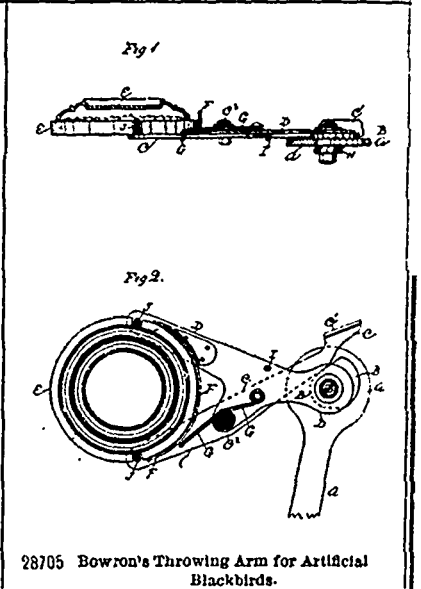
28702 Larkin's Track Jack.



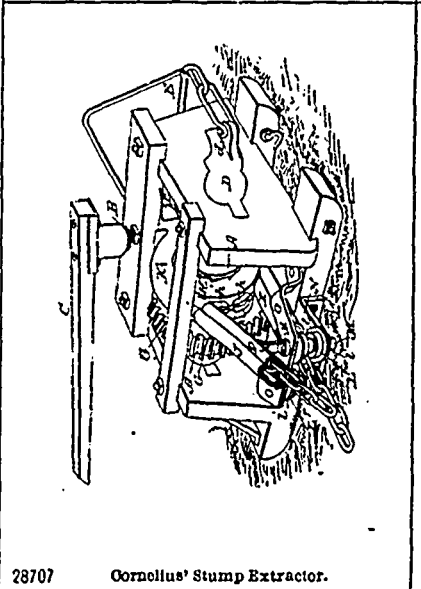
28703 Singleton's Clock and Watch Dial.



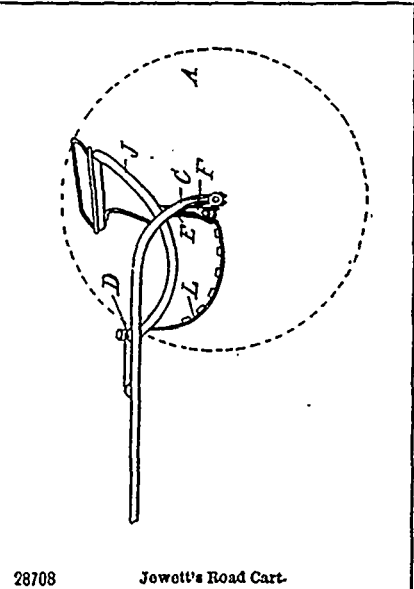
28704 Tallmage's Side Wall Register.



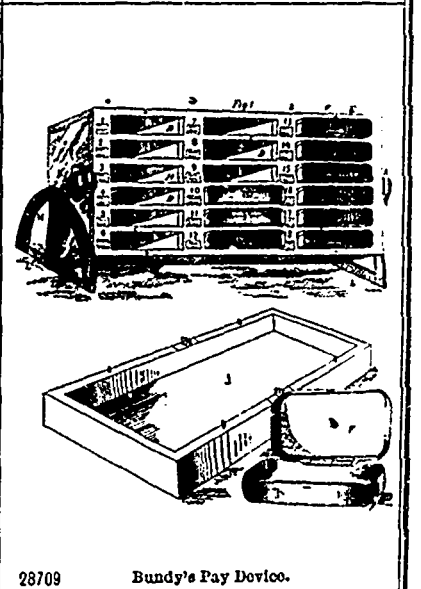
28705 Bowron's Throwing Arm for Artificial Blackbirds.



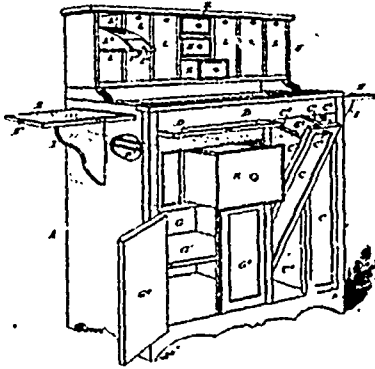
28707 Cornelius' Stump Extractor.



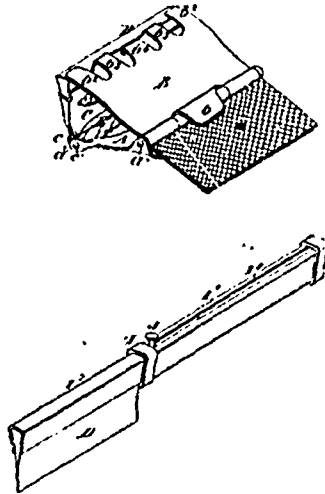
28708 Jowett's Road Cart.



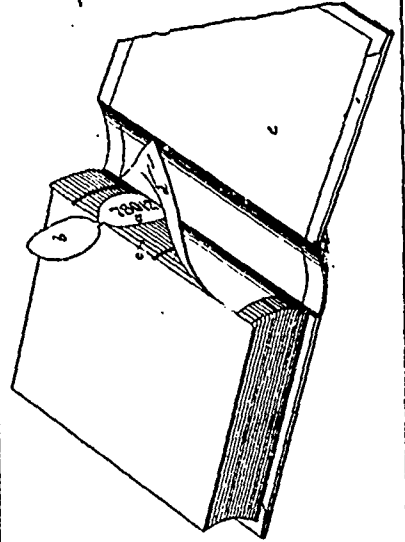
28709 Bundy's Pay Device.



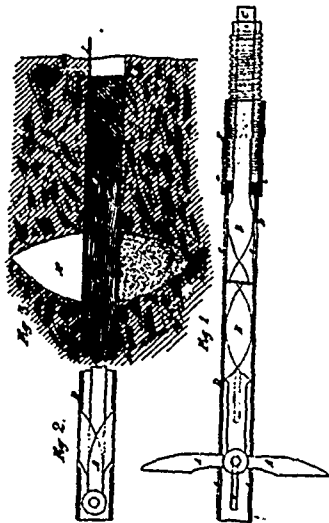
28710 Schaffer's Kitchen Cabinet.



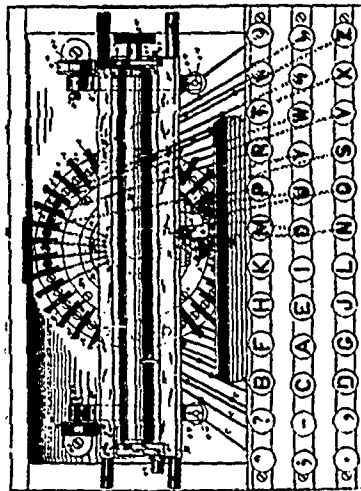
28712 Aloe's Safety Razor.



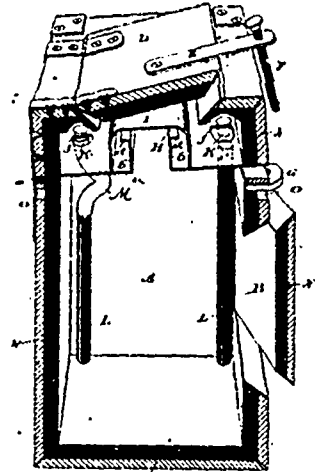
28713 Beer's Process of Manufacturing Books.



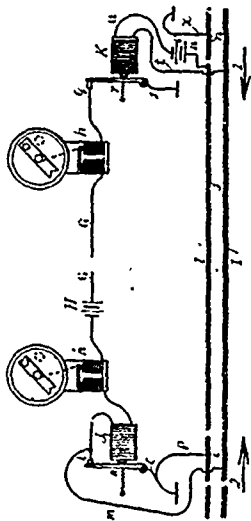
28714 Plon & d'Andrimont's Process of Overturning Stones, etc.



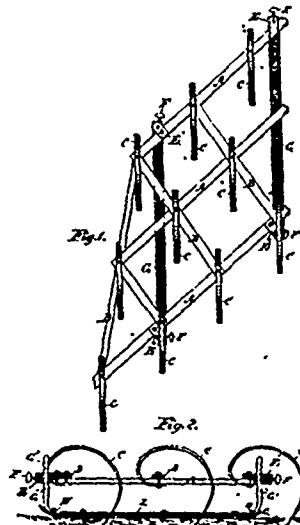
28715 Hamilton's Type Writing Machine.



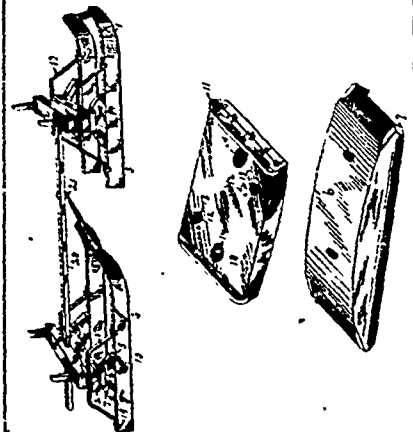
28716 Hohmeler & Ball's Refrigerator Packing Box.



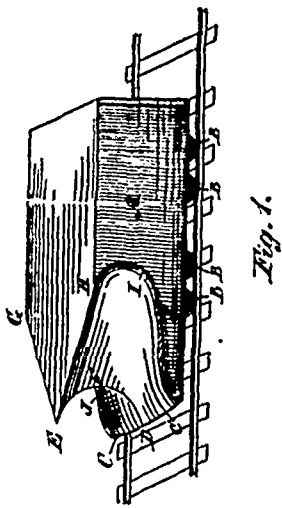
28717 Tisdale's Electric Railway Signal.



28718 McNaughton's Harrow.



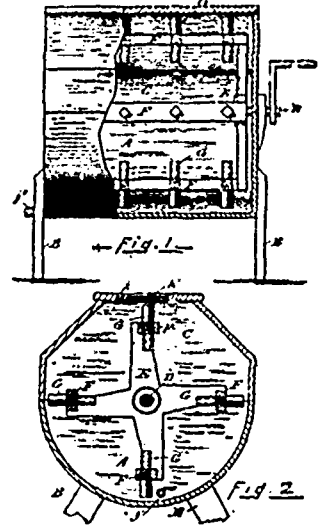
28720 Cox & Forton's Sleigh.



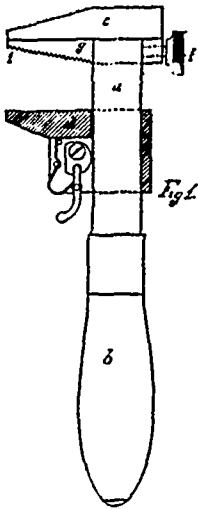
28721 Stackhouse's Snow Plough.



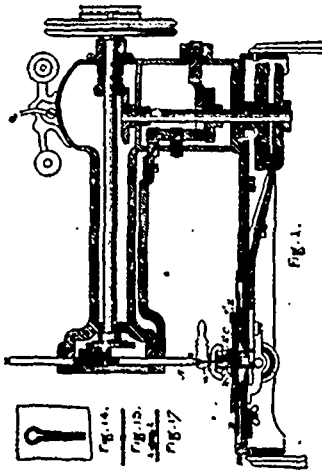
28722 Palmer's Churn.



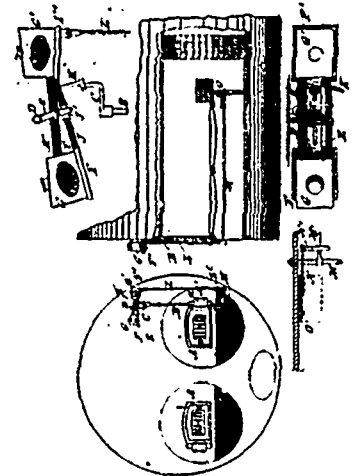
28723 Trudo's Churn.



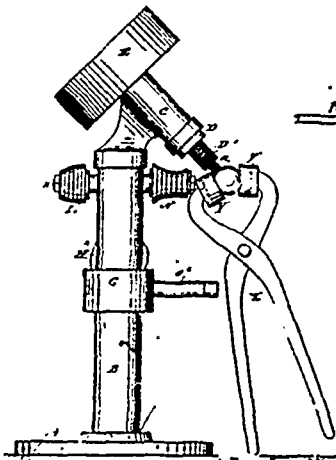
28724 Atwater's Removable Jaw for Wrenches.



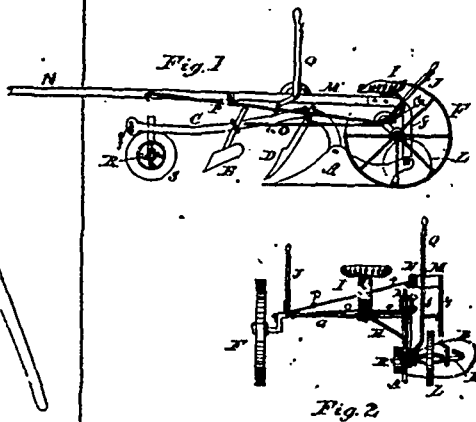
28725 Reed's Button Hole Stitching Machine.



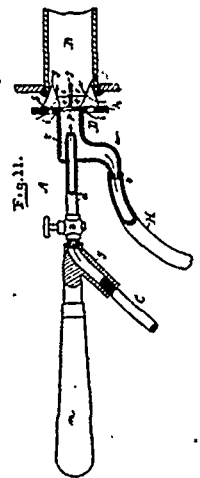
28726 Ineson's Apparatus for the Prevention of Smoke.



28727 Draper's Ball Turning Lath.



28728 Marshall's Sulky Plough.



28729 Curtier's Boiler Tube Cleaner.

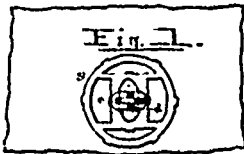


Fig. 1.

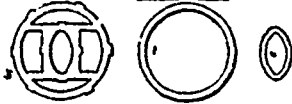


Fig. 2.

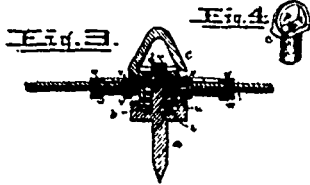


Fig. 3.

28730 Lytle's Curtain Fastener.

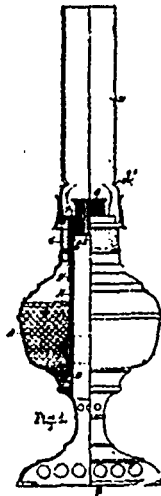


Fig. 1.

28731 English's Lamp.

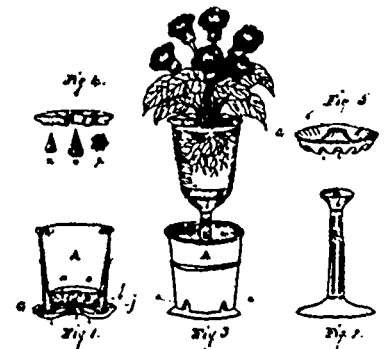


Fig. 1.

28732 Burrough's Flower Pot.

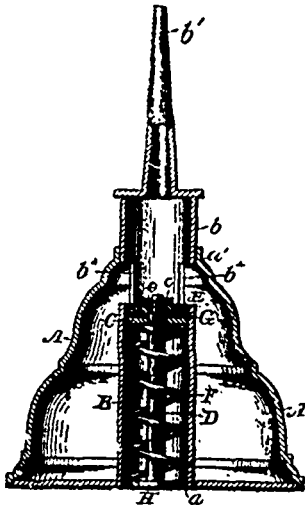


Fig. 1.

28733 Rider's Oil Can.

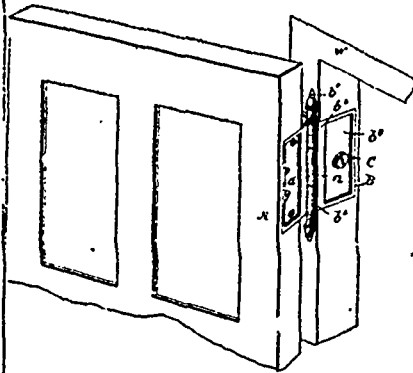


Fig. 1.

28734 Wright's Hinge.

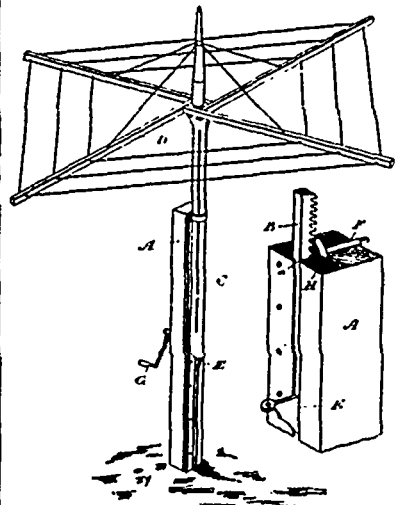


Fig. 1.

28735 Waldron's Clothes Drier.



Fig. 1.

28736 Laval's Apparatus for Silvering Glass.

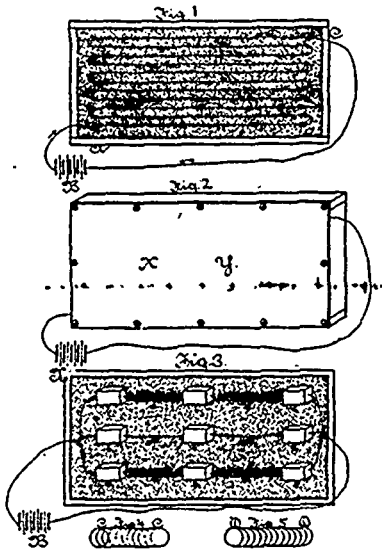


Fig. 1.

28737 Burton's Electric Heater.

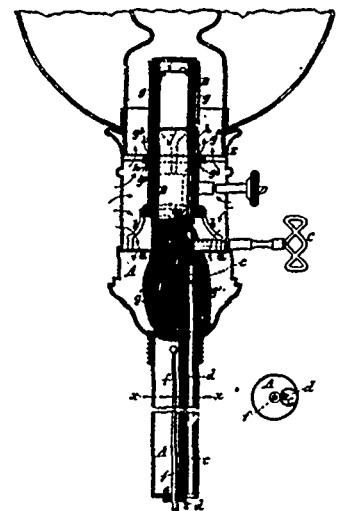
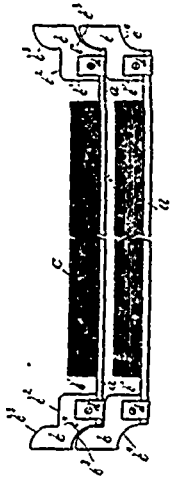
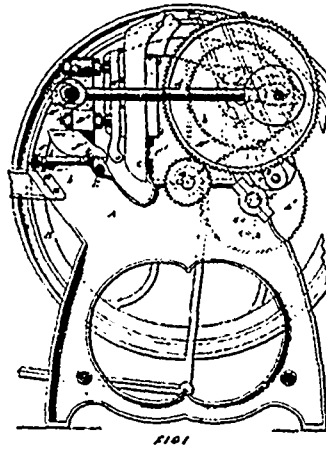


Fig. 1.

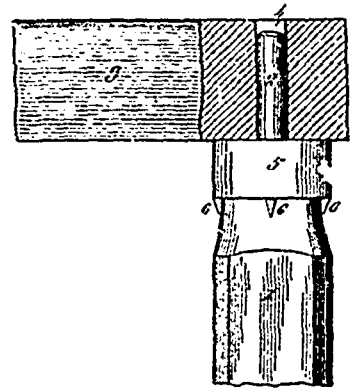
28738 Aria's Lamp.



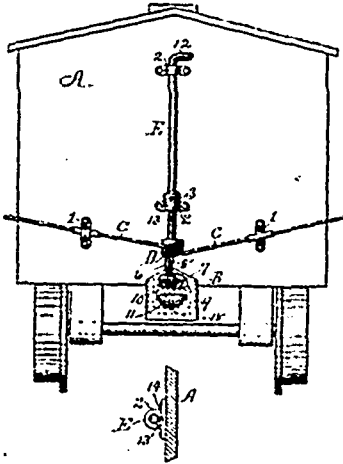
28739 Koerner's Drying Rack.



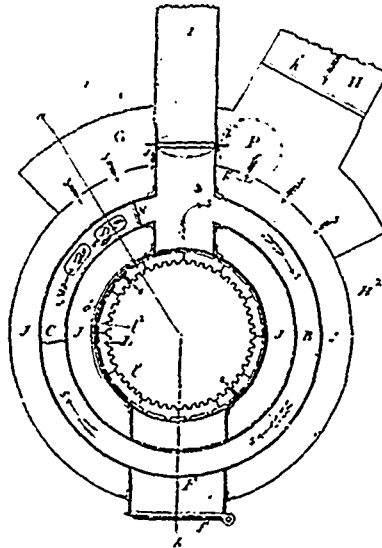
28740 Dorman's Printing Press.



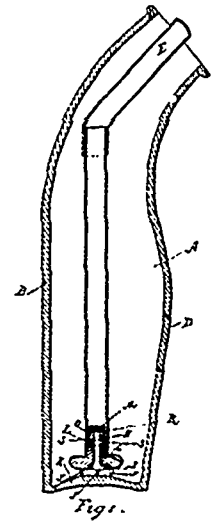
28741 Jannopoulos's Tent Pole.



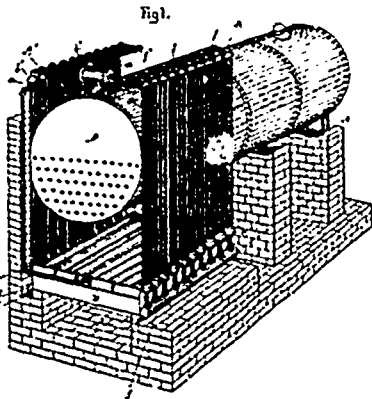
28742 Tyler's Car-Coupling.



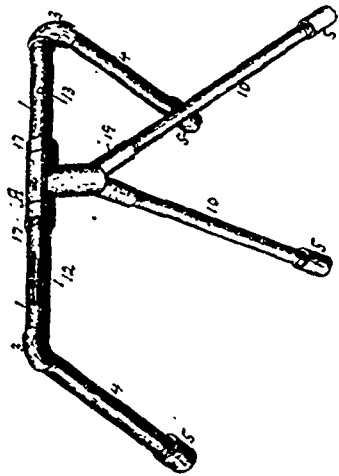
28743 Wanless' Warm Air Furnace.



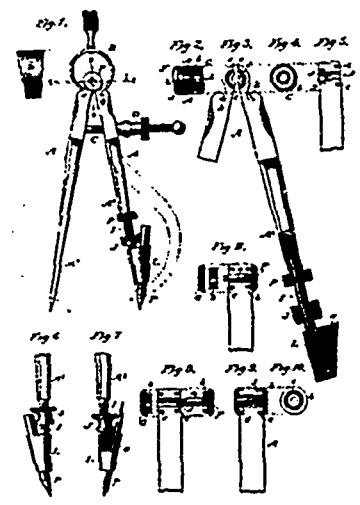
28744 Giroux's Feeding Bottle



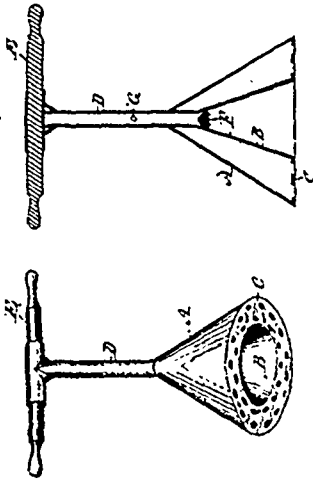
28745 Walker's Lining for Furnaces.



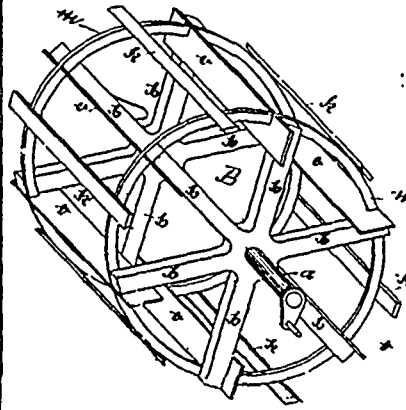
28746 Casler's Trestle Support.



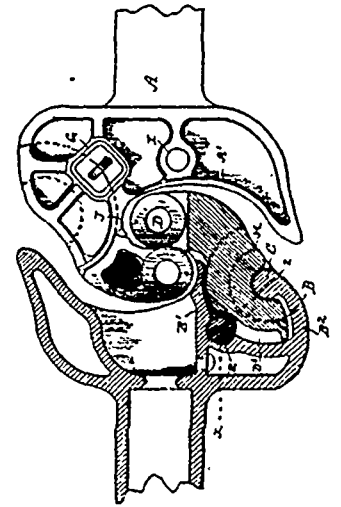
28747 Steven's Compass, etc.



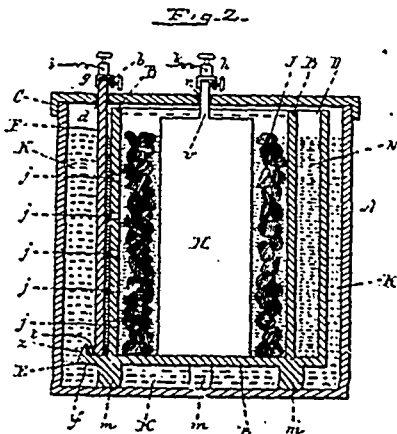
28748 Rath's Clothes Pounder.



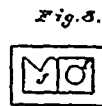
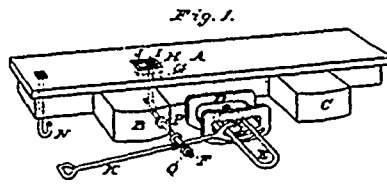
28749 Barnes' Excavator.



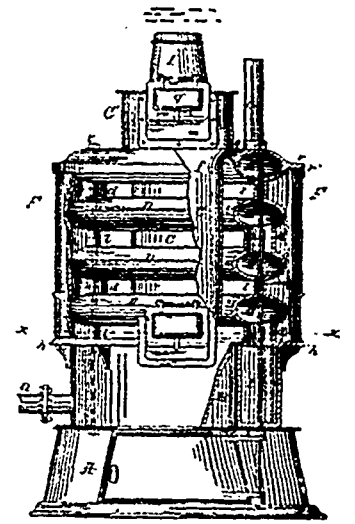
28751 McMunn & Beujaintu's Car Coupling.



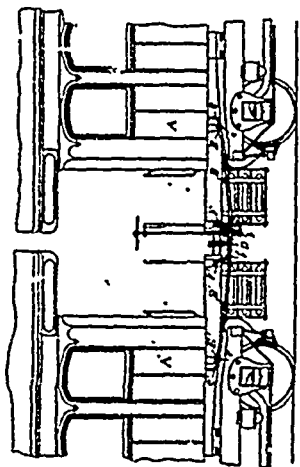
28752 Sereson's Galvanic Battery.



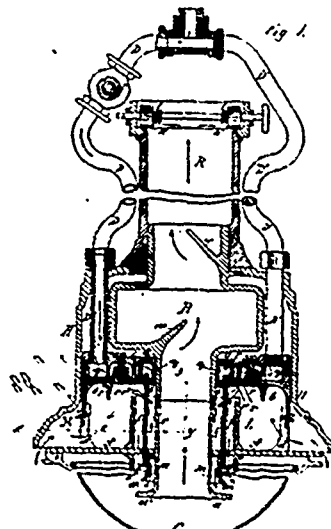
28753 Snyder's Car-Coupling.



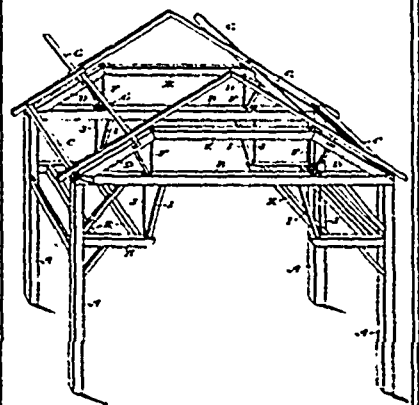
28754 Catchpole's Hot Water Boiler.



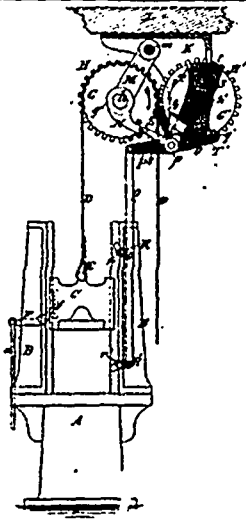
28755 Drodzewski's Steam Pipe Connection.



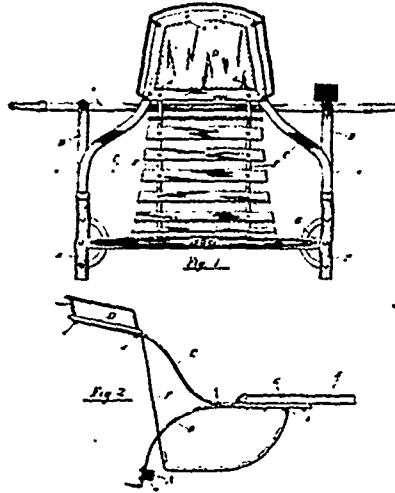
28756 Schwidlinsky's Gas Lamp, etc.



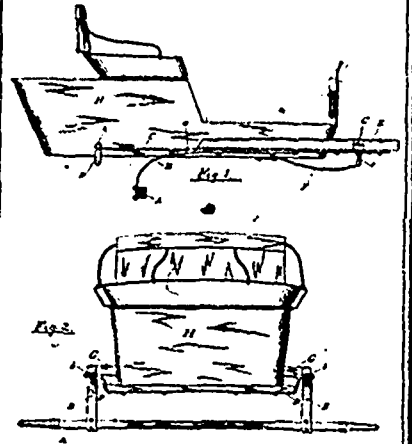
28757 Graham's Barn.



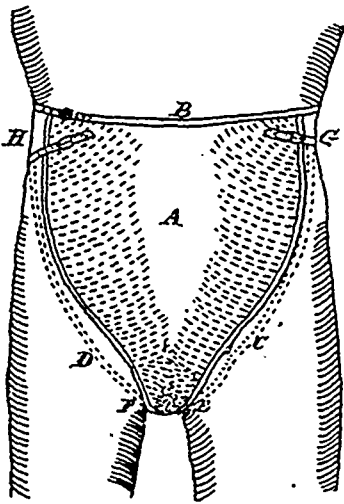
28758 Lewis On. Hammer.



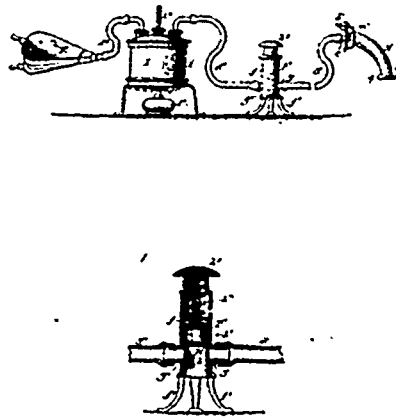
28759 Armstrong's Sulky Gear.



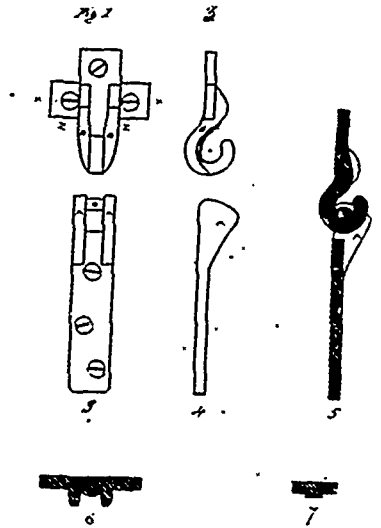
28760 Armstrong's Glg Running Gear.



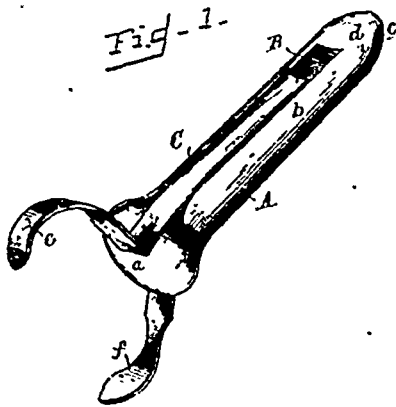
28761 Codd's Abdominal and Pubic Protector.



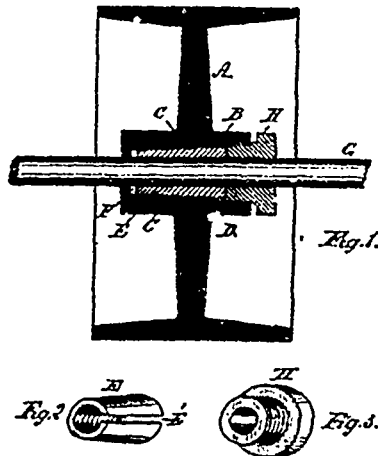
28762 Fell's Apparatus for Producing Artificial Respiration.



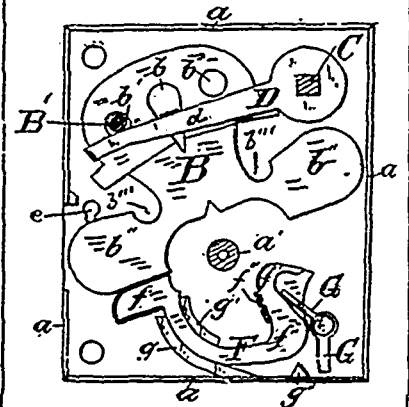
28763 Clarke's Hinge.



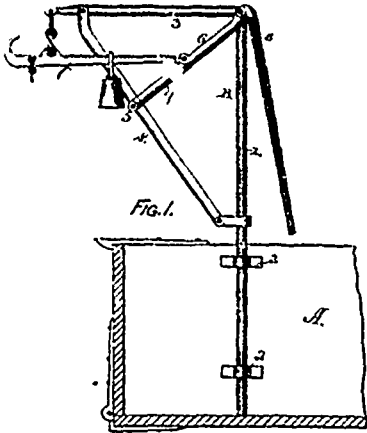
28764 McCall's Recto-Vaginal Speculum.



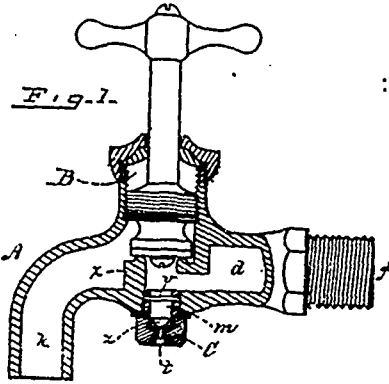
28765 Wynno's Means of Securing Pulleys.



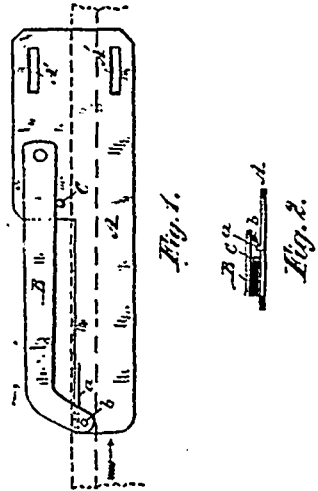
28766 Sandford's Latch and Lock.



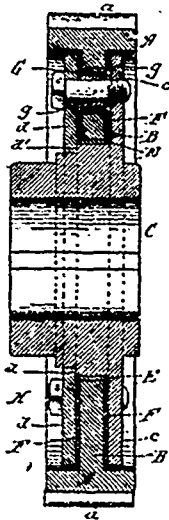
28767 Hackett's Attachment for Vehicles.



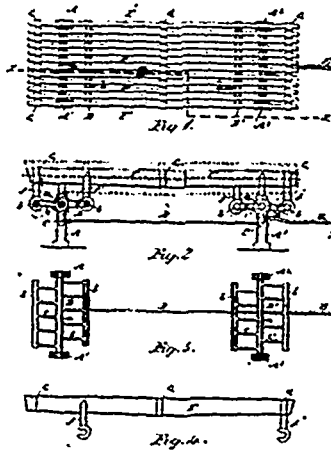
28768 Young's Faucet.



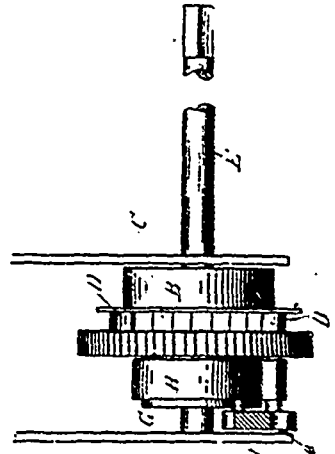
28769 Taylor's Loom Temple.



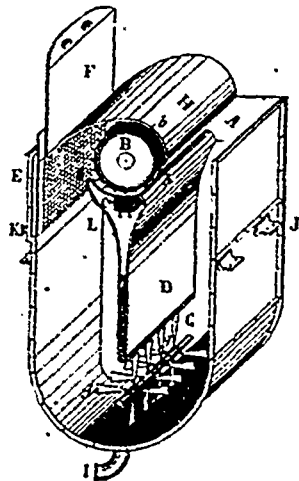
28770 Morgan's Gear Wheel.



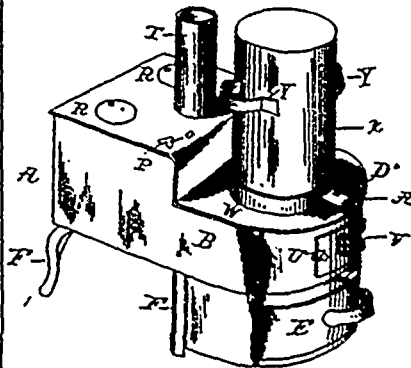
28771 Smith's Furnace Grate.



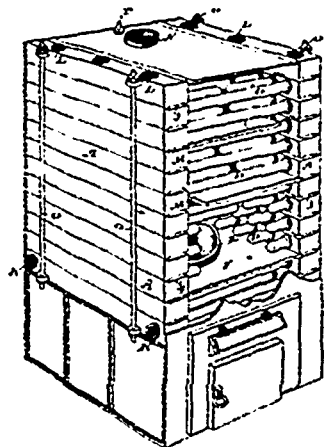
28772 Naab's Spring Motor for Sewing Machines.



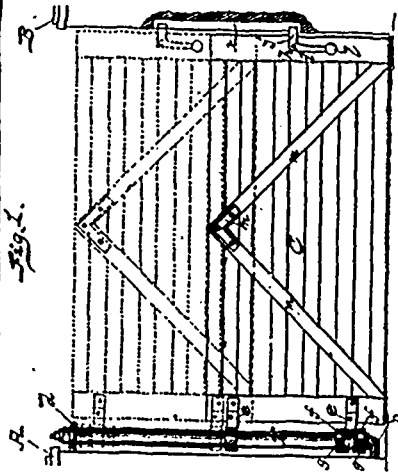
28773 Norton's Pulp Beating Engine.



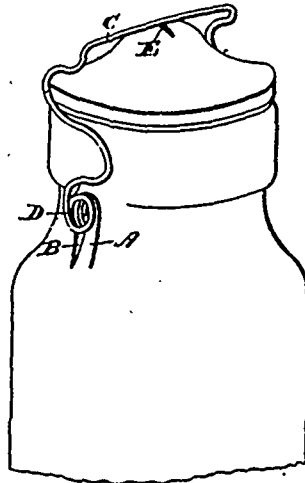
28774 Girtanner's Straw Burning Stove



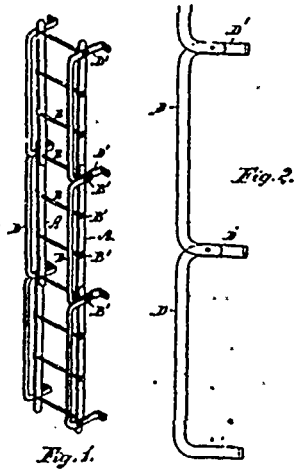
28775 Guest's Sectional Boiler.



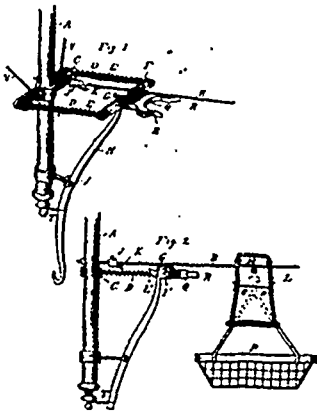
28776 Chaffin's Gate.



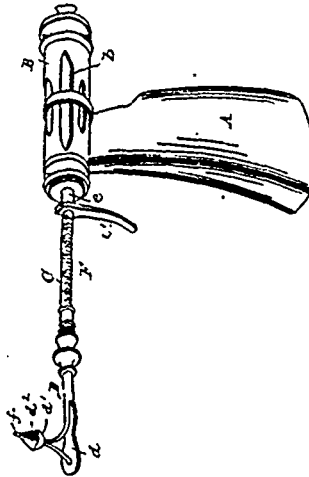
28777 Howo's Jar Fastener.



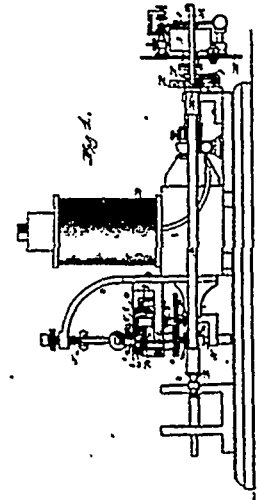
28778 Covell's Fire-escape.



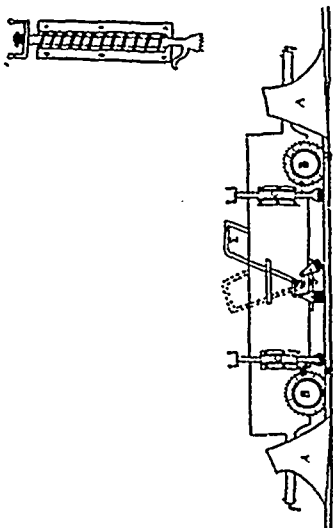
28779 Hamburjer's Store Service.



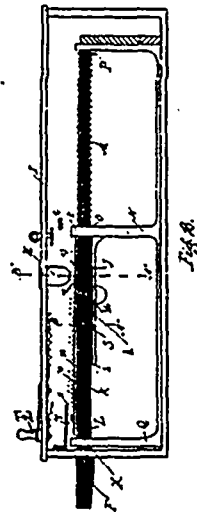
28780 Richards' Dental Syringe.



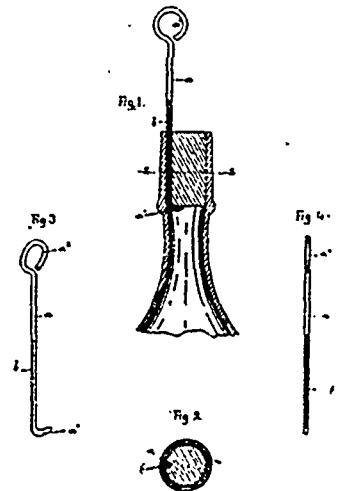
28781 Rogers' Apparatus for Synchronizing the Movement of Motors, etc.



28782 Cotton's Railway Track Clearing Machine.



28783 Belanger's Bar Room Electrical Apparatus.



28784 Greely's Stopper Extractor.