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INVENTIONS PATENTED.

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

No. 31,695. Tug Strap Holder for Looms.

(Guide-courroie pour métiers mécaniques.)

Thomas Kendry and George N. Matheson, Sarnia, Ont., 2nd July 1889; 5 years.

Claim.—1st. A plate fastener G, and a tug-strap holder A, one having recesses H and the other projections P fitted loosely to said recesses, in combination with means for clamping them together and to the side of the picking stick, as and for the purpose set forth. 2nd. The stud or flange S, in combination with the plate fastener G, pin or bolt K having head or shoulder K', spring N, dog L, thumb nut E, ratchet R, and bolt E, as and for the purpose set forth. 3rd. A plate fastener G and a tug strap holder A, one having recesses H and the other projections P fitted loosely to said recesses, in combination with a picking stick and means for clamping them together and to the side of a picking stick, as and for the purpose set forth. 4th. A plate fastener G and a tug strap holder A, one having recesses H and the other projections P fitted loosely to said recesses, in combination with a ratchet R, thumb nut E, bolt E, dog L, spring N, and pin K formed with shoulders K', as and for the purpose set forth. 5th. A plate fastener G and a tug strap holder A, one having recesses H and the other projections P fitted loosely to said recesses, in combination with a ratchet R, thumb nut E, bolt E, picking stick D, dog L, spring N, pin K formed with shoulder K', and stud or flange S, as and for the purpose set forth.

No. 31,696. Bureau. (Commode.)

Dwight C. Clapp, Charles E. Rigley, David M. Estey and The Estey Manufacturing Company, Owosso, Mich., U.S., 2nd July, 1889; 5 years.

Claim.—1st. The herein-described drawer, the sides of which are dropped back from the outer edge to form shoulders on the outer ends of the drawer, each extending beyond the sides of the drawer, and the inner portions of the shoulders being inclined or bevelled, whereby the opening in the bureau may be larger than the drawer, and the drawer may present the same appearance as though it occupied the entire space, substantially as and for the purpose set forth. 2nd. The combination, with a bureau having openings for the reception of the drawers, of a series of drawers in the openings, each drawer being smaller than the space within the bureau, and having its sides dropped back from the outer edge to form shoulders, which extend beyond the sides of the drawer, and have their inner portions inclined or bevelled, whereby the drawer apparently fills the entire space of the opening in the bureau, and presents a neat appearance, substantially as and for the purpose set forth.

No. 31,697. Apparatus for the Desiccation of Materials. (Appareil de dessiccation.)

Thomas R. Houseman and Christian B. M. Sprowles, Philadelphia, Penn., U.S., 2nd July, 1889; 5 years.

Claim.—1st. In combination, perforated disks, a series of pipes passing through said disks into which heat is carried, a piston and mechanism to operate said piston, substantially as described, so as to compress any material upon said disks and desiccate it, and means to carry off said liquid. 2nd. In combination, perforated disks, a series of pipes passing through said disks, in which heat is carried and radiated through the mass, a perforated cylinder surrounding said disks, a cylinder surrounding said perforated cylinder provided with channels, a piston and mechanism to operate said piston, substantially as described, so as to compress any material upon said disks and desiccate it, substantially as and for the purpose specified. 3rd. In combination, double perforated disks having supports and divisions between the upper and lower portions thereof, guide or guides upon which said disks are strung, a piston and mechanism to

operate said piston, substantially as described, so as to compress any material upon said disks and desiccate it, substantially as and for the purpose specified. 4th. In combination, double perforated disks, having supports and divisions between the upper and lower portions thereof, guide or guides upon which said disks are strung, a perforated cylinder having one or more channels surrounding said disks, a cylinder surrounding said perforated cylinder, a piston and mechanism to operate said piston, substantially as described, so as to compress any material upon said disks and desiccate it, substantially as and for the purpose specified. 5th. In combination, double perforated disks, supports and divisions between the upper and lower portions thereof, guide or guides upon which said disks are strung, a series of pipes passing up through said disks in which heat is conveyed, a perforated cylinder surrounding said disks, a cylinder surrounding said perforated cylinder having one or more channels, a piston and mechanism to operate said piston, substantially as described, so as to compress any material upon said receptacles. 6th. In combination, perforated disks, a series of pipes C passing through said disks, a pipe c in each of said pipes, an inlet for steam into said pipes C, and an outlet from said pipes c for condensed steam, a piston and mechanism to operate said piston, substantially as described, so as to compress any material upon said disks and desiccate it. 7th. In combination, perforated disks, a series of pipes passing through said perforated disks in which heat is carried, a piston, screws H, H', bevel-gear h, h', spur-wheels h², h³, whereby said piston compresses any material upon said disks and desiccates it. 8th. In combination, perforated disks, a series of pipes passing through said disks through which heat is carried, a piston, screws H, H', bevel-gear h, h', spur-wheels h², h³, beam P, worm gearing O, O', internally threaded hubs Z, Z', and screws y, y', whereby said piston compresses any material upon said disks and desiccates it. 9th. In combination, a piston, perforated disks, and guides upon which said disks are strung, said guides provided with orifices, whereby the disks may be locked to the guides below the lowermost disk and above the piston. 10th. In combination, a piston, perforated disks, guides upon which said disks are strung, said guides provided with orifices, whereby the disks may be locked to the guides below the lowermost disk and above the piston, and mechanism substantially as described, to elevate said piston, whereby the disks may be elevated. 11th. In combination, double perforated disks having divisions between the upper and lower portions thereof, guides upon which said disks are strung, a series of pipes passing up through said disks in which heat is carried, a piston, screws H, H', bevel-gear h, h', and spur-wheels h², h³, beam P, worm-gearing O, O', internally-threaded hubs Z, Z', and screws y, y', whereby said piston compresses any material upon said disks and desiccates it. 12th. In combination, double perforated disks having divisions between the upper and lower portions thereof, guide or guides upon which said disks are strung, a series of pipes passing up through said disks, a piston, screws H, H', bevel-gear h, h', and spur-wheels h², h³, beam P, worm-gearing O, O', internally-threaded hubs Z, Z', and screws y, y', whereby said piston compresses any material upon said disks and desiccates it. 13th. In combination, perforated disks, a series of pipes passing through said perforated disks in which heat is carried, a piston-beam P, worm-gearing O, O', internally-threaded hubs Z, Z', and screws y, y'.

No. 31,698. Process for Purifying Crude Spirit and Regenerating the Purifying Agent. (Procédé d'épuration des esprits bruts et de révivification de l'agent épurateur.)

Marie C. A. Ruffin, Paris, France, 2nd July, 1889; 5 years.

Claim.—1st. The herein-described process for purifying crude spirit by passing through it heavy petroleum oil of the kind mentioned, and for regenerating the oil, so that the process can be carried on continuously on a given quantity of spirit during the time necessary for its purification.

No. 31,699. Automatic Apparatus for Testing Mine Gases. (Appareil automatique pour éprouver les gaz des mines.)

Thomas Shaw, Philadelphia, Penn., U.S., 2nd July, 1889; 5 years.

Claim.—1st. The combination, with a gas tester, of two pumps, one communicating with a chamber containing the gas to be tested, and

the other with a supply of standard gas, substantially as set forth. 2nd. The combination, with a gas tester, of two pumps, one communicating with a chamber containing the gases to be tested, and the other with a supply of standard gas, and means for varying the pumping action to vary the proportions of the gases forced to the tester, substantially as set forth. 3rd. The combination, with a gas testing apparatus, of two supply pumps connected therewith, and with a mine chamber and standard gas supply respectively, of adjustable devices for varying the action of one of the pumps, substantially as described. 4th. The combination, with a gas testing apparatus, of pumps communicating therewith, and one with a mine chamber, and the other with a standard gas supply, both pistons connected to a single walking beam, and one of the pumps being adjustable in respect to said beam, substantially as set forth. 5th. The combination of a gas tester, two pumps communicating one with the standard gas supply and the other with a mine chamber, means for varying the pumping action, a communication between each pump and the tester, and a valve in said communication, substantially as set forth. 6th. The combination of a gas tester, of two pumps communicating therewith, and with a mine or gas chamber, and a standard gas supply, and a graduated beam or beams connected with the pistons of said pumps for operating the same, substantially as set forth. 7th. The combination, with a gas tester, of two pumps communicating therewith, and with a mine chamber, and a standard gas supply, a graduated walking beam connected to operate the piston of each pump, one of the said pumps and its connections being adjustable to said beam, substantially as set forth. 8th. The combination of a gas tester, a pump communicating therewith and with a supply of standard gas, another pump communicating with the tester and with a series of mine chambers, and a valve, whereby either of said chambers may be put in communication with the latter pump, substantially as described. 9th. The combination of the pumps A, B, a walking beam G provided with a series of connections for the rod of the pump B, a support upon which the latter pump is adjustable, a valve device for controlling the flow of gases from pumps connected with the walking beam to be operated thereby, and a gas tester, substantially as set forth. 10th. The test apparatus consisting of a cylinder uncovered at one end, and communicating at the other end with a pipe for supplying the mixture to be tested, and a burner adjacent to the open end of the cylinder, substantially as set forth. 11th. The combination of a cylinder closed at one end, and communicating with a pipe for supplying the mixture to be tested, and uncovered at the other end, and a burner arranged adjacent to the open end of the cylinder, substantially as set forth. 12th. The combination of the cylinder closed at one end and uncovered at the other, a supply pipe, a burner, and a shield surrounding the burner, substantially as and for the purpose specified. 13th. The combination, with the cylinder uncovered at one end and closed at the other, and with a burner adjacent to the open end, of a supply pipe extending into the cylinder end, constructed and arranged to distribute the gas uniformly within the latter, substantially as set forth. 14th. The combination of a cylinder closed at one end and uncovered at the other and arranged horizontally, a supply pipe communicating with the cylinder near the closed end, and a burner arranged opposite the open end, and adjacent to the lower part of the cylinder, substantially as and for the purpose set forth. 15th. In gas testers, the balance weight and lever *W*, in combination with bow springs *T*, and bow thread *X*, operating as described and for the purpose set forth. 16th. In gas testers, the combination of test tube shown and described in Fig. 11, with test pump cylinder A graduated to deliver definite measured quantities of gas, operating in the manner described and for the purpose set forth.

No. 31,700. Thill. (*Limonière.*)

Elijah J. Hagan, Bayard, Iowa, U.S., 2nd July, 1889; 5 years.

Claim.—1st. The combination, with the forward axle of a vehicle of a thill B formed with the compound curve *b*₁, *b*₂, a cross-piece D, a curved heel C and a thill E, substantially as set forth. 2nd. The combination, with the forward axle, of a vehicle *b*₁, *b*₂, a cross-piece D, a curved heel C a thill E, a lever pivoted to said cross-piece and formed with a loop, a singletree, a pivotal bolt, a link secured to the intermediate portion, and a connecting rod hooked at one end to the link and at the other end to a curved thill, substantially as and for the purpose herein described. 3rd. The combination of the curved thill, the cross-piece, the curved heel secured to the cross-piece at a point near its centre, the equalizing lever having one end pivoted to the cross-piece, and at its other end formed into a loop, a singletree pivoted in the said lever, a link pivoted to the lever at a point intermediate its length, and a brace-rod secured to the link and to a lip on the curved thill, substantially as and for the purpose described.

No. 31,701. Razor Sharpening Machine.

(*Machine à aiguiser les rasoirs.*)

Alexander Dey, Glasgow, Scotland, 2nd July, 1889; 5 years.

Claim.—1st. In combination with the main frame and rotary strap-carriers, a razor holder, supporting-bracket pivoted to the main frame axially parallel with the plane of the strap-carriers, and a stay holding said bracket and connected to the main frame adjustably laterally in relation to the razor holder, as set forth. 2nd. In combination with the main frame, and strap-carriers pivoted to said frame rotatably in a vertical plane, a post rising from the said frame, a bracket pivoted to said post and oscillatory in a horizontal plane, a screw working in the frame horizontally and at right angles to the plane of oscillation of the bracket, and holding the said bracket in its position, and a razor-holder mounted on said bracket, as set forth. 3rd. In combination with the main frame and strap-carriers pivoted to said frame rotatably in a vertical plane, and a razor-holder arranged on the frame in a line parallel with the plane of the strap-carriers, a crank attached to the strap-carriers at one side thereof, a post rising from the frame at the opposite side of the strap-carriers, and a handle attached to said post, substantially as described and shown. 4th. In combination with the main frame and rotatable strap-carriers, a bracket on said frame provided with two posts standing in line with the plane of the strap-carriers, a yoke pivoted to said posts,

a razor-supporting bar pivoted to the yoke axially parallel therewith, springs sustaining said yoke and bar in their normal positions, abutments on one side of the said bar formed with screw-posts, clamping-nuts on the latter posts bearing on top of the razor-shank, a post rising from the opposite side of said bar, and a set screw passing horizontally through the post and binding the razor-shank between the said screw and aforesaid abutments, substantially as described. 5th. The improved razor sharpening machine, consisting of the frame A formed with the lateral base extension *A*₁, and posts *P*, *P*₁ and *P*₂, the strap-carriers *F*, *F* pivoted to the side of the post *P*, and provided with the crank *I*, the handle *H* attached to the post *P*₁, the bracket B formed with the vertical sleeve C pivoted to the post *P*₂, and with the horizontal base-extension *D*, and upwardly curved post or arm *D*₁, the yoke *a* pivoted to the post *D*, and sleeve *C*, the bar *b* pivoted at opposite ends to the ends of said yoke, and provided with the downward projecting brace *c*, the spring *d* connecting the lower portion of the yoke to the base of the bracket B, the spring *d*₁ connecting the brace *c* with the said portion of the yoke, abutments *e*, *e* on one side of the bar *b*, formed with screw-threaded posts *e*₁, *e*₂, nuts *n*, *n* on said posts, the post *f* on the opposite side of the bar, the set-screw *g* passing horizontally through said post, and the set-screw *h* working horizontally in the frame A and at right angles to the base-extension *D* of the bracket, and provided with a circumferential groove in its head, and engaging thereby the extremity of the aforesaid base-extension, substantially as described and shown for the purpose set forth.

No. 31,702. Steam Engine. (*Machine à vapeur.*)

Robert McNaughton, Truro, N.S., 2nd July, 1889; 5 years.

Claim.—The combination of the steam chests *j*, *j* and the valves *c*, *c*, with the valve stems *d*, *d*, the cranks *g*, *g*, and the connecting rod *h*, substantially as and for the purpose hereinbefore set forth.

No. 31,703. Boot and Shoe Vamp.

(*Empeigne de chaussure.*)

Jean L. Peltier, Montréal, Qué., 2nd July, 1889; 5 years.

Résumé.—Un nouvel article de manufacture, une empeigne de chaussure composée de deux portions distinctes et symétriques en elles-mêmes, dont une A est découpée de manière à donner la courbe extrême *c*, les grandes courbes rentrantes *a*₁, *a*₂, les pointes *h*, *h*, les courbes aussi rentrantes *m*₁, *m*₂, *d* et l'échancrure *e*, et l'autre B en forme de fer de lance, et ayant les courbes extérieures *m*₃, *m*₂, *d*₁, *d*₂, *d*₃ et la pointe *m*₃, le tout tel ci-dessus décrit et pour les fins susmentionnées.

No. 31,704. Milk Can. (*Boîte à lait.*)

Henry R. Sayers, Hamilton, Ont. (assignee of Max Schwarz, Alexandria, Va., U.S.), 2nd July, 1889; 5 years.

Claim.—A The combination, with the can having the supports *G*, the handle *H* pivoted to said supports, and the locking flange *R*, of the cover comprising the concavo-convex portion, having the vertical peripheral flange *a* to fit in the neck of the can, the upper portion *b* having the vertical annular rim *c*, the annulus *d* at the lower edge of said rim and forming a groove to receive the upper edge of the neck of the can, and in the inner side of which groove, the upper edge of said flange *a* is secured, the bar *J* extending across the centre of the cover and having its ends secured inside of the annulus to the grooved annulus *d*, the catches *N* secured to, and projecting from opposite sides of the cover, and adapted to engage under the ends of the handle *H*, and the locking flange *P* secured to and projecting from the cover adapted to register with the locking flange *R* of the can, when the handle ends are engaged by the catches, the said locking flange *P*, having the downward stop *Q* adapted to engage the flange *P*, for the purpose set forth, substantially as described.

No. 31,705. Horse Power Hoisting Machine.

(*Montecharge à manège force de cheval.*)

Franklin L. Downend, Halifax, N.S., John O. Hibbard, Cincinnati Ohio, U.S., and Henry K. Fisher, Halifax, N.S., 2nd July, 1889; 5 years.

Claim.—The combination, with the horse power having the sweep *O*, spindle *H*, cog gear wheels *B*, *C*, and shaft A having clutch *D*, of the hoisting gear consisting of the frame *N*, drum *E*, brake-band *M* operated by lever *L* and lever *K* operating the clutch, as and for the purpose set forth.

No. 31,706. Sand Papering Machine.

(*Machine à appliquer le papier de verre.*)

Andrew Durand (assignee of William E. Spour), London, Ont., 2nd July, 1889; 5 years.

Claim.—1st. The combination of the grooved pulley *R*, having an oblique groove *R*₁ formed therein, shaft *A*₃, lever *S*, shaft *A*₂, sand papering drum *N*, and means for operating the same, substantially as and for the purpose set forth. 2nd. In combination with the above, the anti-friction collar or thimble *T*, substantially as and for the purpose set forth. 3rd. The combination of the screws *C*₁ operating hand wheel *C*₃, collars *C*₂, *C*₃ chain wheels *G*₃ and *G*₄, chain belt *G*₅, brackets *L*, adjustable bearings *B*₁, guides *B*, shaft *A*₁ and feeding frictional drum *I*, substantially as and for the purpose set forth. 4th. In combination with the above, the shaft *A*₃, chain wheels *G*₁, *G*₂, chain belt *G*, pivotal arm *F*, weight *E* and tightener chain wheel *G*₆, substantially as and for the purpose set forth. 5th. The combination of the grooved pulley *R*, having an oblique groove *R*₁ formed therein, shaft *A*₃, lever *S*, shaft *A*₂ and sand papering drum *N* with the feeding frictional drum *I*, and means for operating the same, substantially as and for the purpose set forth. 6th. In combi-

nation with the above, the cover J and roller K, substantially as and for the purpose set forth. 7th. The combination of the pulley R, having an oblique groove R₁ therein, shaft A₃, lever S, anti-friction collar T, bearings S₄, frame C, collar S₁, stops S₂, shaft A₂, sand papering drum N formed of the disks n₁, bars n₅ having recesses n₃ therein, screw bolt n₂ and sand paper n₁, casing P, tube P₁, adjustable bearings B₂, bolts and nuts d, slots d₁, adjustable bearings B₁, formed with fins or tenons b₃, guides B formed with grooves b₄, shaft A₁, frictional feeding drum I, brackets L, screws C₁, collars C₂, operating hand wheel C₃, chain wheels G₁, G₂, G₃, G₄, chain belts G and G₅, pivotal arm F, weight E and tightener chain wheel G₆, substantially as and for the purpose set forth. 8th. In combination with the above, the pulley D, toothed pinions E₁, E₂ and toothed wheels F₁, F₂, substantially as and for the purpose set forth.

No. 31,707. Coffee Mill. (*Moulin à café.*)

John M. Waddel, Greenfield, Ohio, U.S., 2nd July, 1889; 5 years.

Claim.—In a hand coffee mill, the combination, with the mill-bow A and its grinding shaft 4 and hopper cover 2, of the handle 9, formed and arranged substantially as shown and described for the purposes set forth.

No. 31,708. Saw Swaging Machine.

(*Machine à étamper les scies.*)

James B. Rhodes, Grand Rapids, Mich., U.S., 2nd July, 1889; 5 years.

Claim.—1st. In a saw swaging machine, the combination, with the bed plate A and cap A₁, each provided with a longitudinal shoulder P, of the anvil supporting bar K, having the inclined groove M, the anvil K₁ and the bolts B, substantially as and for the purpose hereinbefore set forth. 2nd. In a saw swaging machine, the combination, with the anvil K₁ and bar K, of the pivoted die F provided with the adjusting screw I, having the spring H, shaft C, cam D and block E, substantially as and for the purpose hereinbefore set forth. 3rd. In a saw swaging machine, the combination, with the die F and the bar K, of the lifting spring L and adjusting spring X, substantially as and for the purpose set forth. 4th. In a saw swaging machine, the combination, with the plates A, cap A₁, spring L, anvil K₁ and bar K, having groove M, of the guide Q, clamping jaws O, O₁ and spring S, substantially as and for the purpose hereinbefore set forth.

No. 31,709. Corner Iron and Tightening Device for Mattresses. (*Cornière et serre-joint de sommier.*)

Charles H. Triphagen, Portland, Me., U.S., 2nd July, 1889; 5 years.

Claim.—1st. The combination, with the side and cross bars of a mattress frame, of brackets C provided with means for adjusting the strain upon the fabric at one or both ends thereof, substantially as described. 2nd. The combination, with the side and cross bars of a mattress frame, of brackets C adapted to adjustably support one cross bar, and the bracket F adapted to fixedly support the other cross-bar, substantially as described.

No. 31,710. Elastic Folding Display Envelope. (*Enveloppe-montre élastique.*)

Henry P. Eysenbach, Delphos, Ohio, U.S., 4th July, 1889; 5 years.

Claim.—1st. An envelope, provided with the usual flap and creased from side to side, and combined with a string or strip secured at the flap end of the envelope, and a retaining device for the string or strip upon the body of the envelope, whereby, when said envelope is folded of the crease it can be retained in that bent shape, substantially as described. 2nd. The envelope A, creased at one end and provided with a cord for opening the end, and extending forward and attached to the body of the envelope so that the envelope may be opened out at any angle for displaying, the whole arranged as and for the purpose substantially as herein set forth and described.

No. 31,711. Mocassin Boot Fastening.

(*Ligature de mocassin.*)

Olivier Durocher, Ottawa, Ont., 4th July, 1889; 5 years.

Claim.—In a mocassin boot, the laces F secured to loops C in the upper, brought through the holes G in the front part D, and thence crossed behind the leg, brought through holes in the edges of the front part, and thence rearward and tied, substantially as herein set forth.

No. 31,712. Bustle. (*Tournure.*)

Christy Campbell, Ottawa, Ont., 4th July, 1889; 5 years.

Claim.—1st. A bustle or dress extender constructed substantially as herein shown and described, and consisting of a body or form made up of elastic loops, as a base, having a cross-piece to hold them together at their ends a suitable distance apart, and stays to exert with them an outward and upward buoyancy to the rear, and above the waist line of the wearer, and a waist-band, as set forth. 2nd. In a bustle or dress extender, the combination of the loops A, B, C, D and E, F, having the cross-piece G, H, whereby with the stays I, J, K, they are held in position and made more elastic with the said stays, and a waist-band, as set forth. 3rd. In a bustle or dress extender, the combination, with the stays I, J, K, of the loops A, B, C, D and E, F, substantially as hereinbefore shown and described and as and for the purposes set forth.

No. 31,713. Clock. (*Horloge.*)

Albert L. Parcell, Boston, Mass., U.S., 6th July, 1889; 15 years.

Claim.—1st. The combination, substantially as set forth, of a driven train, a pendulum formed of a bar or strip of resilient material clamped at its upper end, and a scapement interposed between the pendulum and the clock train. 2nd. A pendulum, substantially such as herein described, consisting of a bar or strip of resilient material, clamped at one end in its support. 3rd. A pendulum, substantially such as herein described, formed of a flat elongated strip of resilient material, adapted to be clamped at one end in its support. 4th. A pendulum, substantially such as herein illustrated, consisting of a bar or strip of resilient material, of uniform, or substantially uniform, cross section, held at one end in its support. 5th. A pendulum, substantially such as herein described, consisting of a bar or strip of resilient material clamped in its support at one end, and having a suitable bob. 6th. The combination, substantially as set forth, of a driven train, a pendulum formed of a bar or strip of resilient material capable of bending throughout its entire length as it vibrates, and a scapement interposed between the pendulum and train.

No. 31,714. Electric Clock. (*Horloge électrique.*)

Albert L. Parcell, Boston, Mass., U.S., 6th July, 1889; 15 years.

Claim.—1st. The combination, substantially as set forth, of a bar of resilient material forming an elastic vibrating pendulum capable of bending from end to end, a clock-train driven thereby, an armature on the pendulum and a magnetic pole or poles for driving the pendulum having their faces located outside of the line or path of vibration. 2nd. The combination, substantially as set forth, of a pendulum formed of a thin bar of yielding elastic metal rigidly clamped at one end and capable of bending from end to end as it vibrates, a clock-train driven by said pendulum, an armature on the pendulum, an electro magnet or magnets having their poles located outside of the path of vibration and switch devices. 3rd. The combination of the elastic or resilient arm clamped at one end constituting a spring-pendulum capable of bending from end to end, a clock-train driven thereby, an armature on the end of the pendulum, an adjustable bob on the pendulum, whereby its rate of vibration may be modified, an electric circuit, motor-magnets and switch devices. 4th. The combination of the electrically-driven vibrator, the electric circuit and switch devices, a clock-train actuated by the vibrator, and an actuating mechanism interposed between the clock-train and the vibrator, whereby the train is driven a definite distance at each vibration of the vibrator, irrespective of the amplitude of vibration. 5th. The combination of an electrically-driven spring-bar pendulum clamped at one end, and consisting of a bar of elastic material capable of bending in its entire length, and a clock-train actuated thereby, substantially as and for the purpose set forth. 6th. The combination of the electrically-driven spring-bar pendulum consisting of a flat resilient bar of uniform thickness and resilience throughout its length, and the clock-train actuated thereby, substantially as and for the purpose set forth. 7th. The combination of the electrically-driven spring-bar pendulum consisting of a rod or bar of elastic material clamped at its upper end, and a clock-train actuated thereby, substantially as set forth. 8th. The combination in an electric clock, of an electrically-driven pendulum, the driving magnet which operates said pendulum, its battery and circuit, the moving switch actuated by the driven pendulum, and the electrical contacts thereon, and electrical connection, whereby the driving magnet is intermittently energized to vibrate the pendulum without breaking the battery circuit. 9th. The combination of the electrically-driven pendulum, the driving magnet, its battery and circuit, switch devices actuated by the pendulum in its vibration, a brush, and contacts on the switch, and a branch or short-circuit through which the battery is short-circuited when the pendulum is at and near the limit of its swing, substantially as set forth. 10th. The combination of the electrically-driven pendulum, the driving magnet, its battery, and circuit switch devices actuated by the pendulum, three switch contacts, the middle one being connected through the magnet with one pole of the battery, and the other two connected with the same pole of the battery outside of the magnet, and the switch brush connected with the opposite pole of the battery. 11th. The combination of the electrically-driven pendulum, switch devices intermittently operated by the pendulum, the driving magnet, and its battery and circuit, and a weighted or gravity brush which bears on the switch. 12th. The combination of the electrically-driven pendulum, electric switch devices actuated thereby, electric contacts on the under or bottom face of the switch, and a brush which bears on the contacts. 13th. The combination of the electrically-driven pendulum, the pendulum pivoted sector-switch, the contact or contacts on its curved bottom face, and a brush bearing thereon. 14th. The combination, with the notched driving or anchor lever D, of the endwise adjustable arm or rod c₃. 15th. The combination of the notch driving or anchor lever D, the rock-shaft actuated by the pendulum, the arm or lever c₃, and the set-screw or similar device for clamping the arm b₁ in or on the rock-shaft. 16th. The combination of the notched driving or anchor lever D, the rock-shaft and the arm or intermediate lever carried by the rock-shaft.

No. 31,715. Flexible Hose or Tubing.

(*Boyaux ou tuyaux élastiques.*)

James E. Emerson and Thomas Midgley, Beaver Falls, Penn., U.S., 7th July, 1889; 5 years.

Claim.—1st. Flexible hose composed of a tubular metallic body formed of interwoven sections of coiled wire, and covering of rubber or its equivalent, substantially as described. 2nd. Flexible hose composed of a tubular metallic body formed of interwoven sections of coiled wire, embedded in and covered with rubber or other flexible plastic material, substantially as described. 3rd. Flexible hose composed of a continuous tubular metallic body formed of interwoven

elongated links, having the interstices between the links filled with rubber and its outer surface covered with the same, substantially as described. 4th. Flexible hose composed of a tubular metallic body formed of interwoven elongated links, having the interstices filled with rubber, and provided with a canvas lining and covering, substantially as described.

No. 31,716. Hose or Tubing. (*Boyau ou tuyau.*)

Thomas Midgley and James E. Emerson, Beaver Falls, Penn., U.S., 9th July, 1889; 5 years.

Claim.—1st. Hose or tubing composed of a body formed of intertwined sections of coiled wire having the helices expanded into links running in the direction of the circumference of the tube, and provided with a longitudinal re-enforcement, the links and the re-enforcement being embedded in and covered with rubber or equivalent material. 2nd. Hose or tubing composed of a body formed of intertwined sections of coiled wire, having the helices expanded into links and provided with a longitudinal re-enforcement within or between the links, the whole embedded in and covered with rubber or its equivalent material, substantially as described.

No. 31,717. Method of Manufacturing Belting. (*Mode de fabrication des courroies.*)

Thomas Midgley and James E. Emerson, Beaver Falls, Penn., U.S., 9th July, 1889; 5 years.

Claim.—1st. The method of manufacturing wire belting herein described, which consists in forming a sheet or body by intertwining sections of coiled wire, then heating the sheet or body so formed, and elongating, flattening and heating the helices by subjecting said body to longitudinal tension only while heated. 2nd. The method of manufacturing wire belting herein described, which consists in forming a sheet or body by intertwining sections of coiled wire, then wrapping the body diagonally around a mandrel, and securing the adjacent edges by a separate section of coiled wire, then heating the tube so formed and elongating the helices by subjecting the tube to longitudinal tension while heated, then flattening the tube, and finally covering it with rubber.

No. 31,718. Grain Scourer and Cleaner.

(*Cylindre émotteur.*)

Arthur Moore, Toronto, Ont., 16th July, 1889; 5 years.

Claim.—1st. A vertical conveyor revolving within a perforated cylinder, in combination with a chamber surrounding said cylinder, an air leg communicating with the said chamber at its upper end, and with the cylinder at its lower end, and passage ways designed to spout the grain into the bottom of the conveyor, and to discharge it out of the top of the cylinder, substantially as and for the purpose specified. 2nd. A conveyor revolving within a perforated cylinder, and having its outer edge formed into a series of fingers, each finger being curved or bent so that one edge shall project slightly above the edge of the finger next to it, in combination with a chamber surrounding said cylinder, an air leg communicating with the said chamber at its upper end, and with the cylinder at its lower end, and passage ways designed to spout the grain into one end of the conveyor, and to discharge it out of the other end, substantially as and for the purpose specified. 3rd. A vertical conveyor revolving within a perforated cylinder, and having its outer edge formed into a series of fingers each finger being curved or bent so that one edge shall project slightly above the edge of the finger next to it, in combination with a chamber surrounding said cylinder, an air leg communicating with the said chamber at its upper end, and with the cylinder at its lower end, and passage ways designed to spout the grain into the bottom of the conveyor, and to discharge it out of the top of the conveyor, and with a suction fan located above the conveyor, substantially as and for the purpose specified. 4th. A vertical conveyor revolving within a perforated cylinder, and having its outer edge formed into a series of fingers, each finger being curved or bent so that one edge shall project slightly above the edge of the finger next to it, in combination with a chamber surrounding said cylinder, an air leg communicating with the said chamber at its upper end, and with the cylinder at its lower end, and passage ways designed to convey the grain into the bottom of the conveyor, and to discharge it out of the top of the conveyor, and with a suction fan located above the conveyor, substantially as and for the purpose specified. 5th. A vertical conveyor revolving within a perforated cylinder contained within a chamber, a revolving suction fan contained within the said chamber in which it is designed to produce an upward draft, and an outward blast through the sides of the said chamber, in combination with passage ways designed to spout the grain into the bottom of the conveyor, and to discharge it out of the top of the conveyor, and adjustable valves for regulating the passage into and from said chamber, substantially as and for the purpose specified. 6th. A hollow shaft, a vertical conveyor carried by said shaft revolving within a perforated cylinder contained within a chamber, the edges of the said conveyor being formed into a series of fingers, each finger being curved or bent so that one edge shall project slightly above the edge of the finger next to it, a revolving suction fan contained within the said chamber in which it is designed to produce an upward draft, and an outward blast through the sides of the said chamber, in combination with passage ways designed to spout the grain into the bottom of the conveyor and discharge it out of the top of the conveyor, substantially as and for the purpose specified. 7th. A vertical conveyor revolving within a perforated cylinder contained within a chamber, a revolving suction fan contained within the said chamber in which it is designed to produce an upward draft, and an outward blast through the sides of the said chamber into the chamber H communicating with the chamber K, connected to the chamber containing the conveyor at or near its bottom end, shelves projecting over the openings between the chamber H, and chamber K being provided, in combination with passage ways designed to spout the grain into the bottom of the conveyor, and to discharge it out of the top of the conveyor, substantially as and for the purpose specified. 8th. A vertical conveyor revolving within a perforated cylinder

contained within a chamber, a revolving suction fan contained within said chamber in which it is designed to produce an upward draft, and an outward blast through the sides of the said chamber into the chamber H, communicating with the chamber K, connected to the chamber containing the conveyor, at or near its bottom end, shelves projecting over the openings between the chamber H, and chamber K, being provided in combination with said chambers H and K, the air-leg L connected at its upper end with the chamber containing the suction fan, and at its bottom end with the interior of the perforated cylinder at or near the bottom end of the revolving conveyor, a grain spout being connected to the said air-leg near its bottom, and a discharge spout communicating with the interior of the perforated cylinder at the top of the conveyor, substantially as and for the purpose specified. 9th. A vertical conveyor revolving within a perforated cylinder having a series of brushes arranged in it, said perforated cylinder being contained within a chamber, a revolving suction fan contained within the said chamber in which it is designed to produce an upward draft, and an outward blast through the sides of the said chamber into the said chamber H, arranged to communicate with the chamber K connected to the chamber containing the conveyor at or near its bottom end, in combination with the air leg L connected at its upper end with the chamber containing the suction fan, and at its bottom end with the revolving conveyor, a grain spout being connected to the said air-leg near its bottom, and a discharge spout communicating with the interior of the perforated cylinder at the top of the conveyor, substantially as and for the purpose specified. 10th. A vertical conveyor revolving within a perforated cylinder having a series of brushes arranged in it, said perforated cylinder being contained within a chamber, a revolving suction fan contained within the said chamber in which it is designed to produce an upward draft, and an outward blast through the sides of the said chamber into the chamber H communicating with the chamber K connected to the chamber containing the conveyor at or near its bottom end, in combination with an air-leg L connected at its upper end with the chamber containing the suction fan, and at its bottom end with the interior of the perforated cylinder at or near the bottom end of the revolving conveyor, a grain spout being connected to the said air-leg near its bottom and above one or more air-regulating valves, placed on an opening or openings connecting the air-leg with the chamber K, and a discharge spout communicating with the interior of the perforated cylinder at the top of the conveyor, substantially as and for the purpose specified. 11th. A vertical conveyor revolving within a perforated cylinder having a series of brushes arranged in it, said perforated cylinder being contained within a chamber, a revolving suction fan contained within the said chamber in which it is designed to produce an upward draft, and an outward blast through the sides of the said chamber into the chamber H communicating with the chamber K connected to the chamber containing the conveyor at or near its bottom end, in combination with the air-leg L connected at its upper end with the chamber containing the suction fan, and at its bottom end with the interior of the perforated cylinder at or near the bottom end of the revolving conveyor, a grain spout being connected to the said air-leg near its bottom and above one or more air-regulating valves placed on an opening or openings connecting the air-leg with the chamber K, and a discharge spout communicating with the interior of the perforated cylinder at the top of the conveyor, and with the interior of the chamber containing the suction fan, regulating air valve or valves being placed on an opening or openings made between the discharge spout and chamber K, below the passage way leading between the said discharge spout and the interior of the perforated cylinder, substantially as and for the purpose specified.

No. 31,720. Telephone Exchange Signaling. (*Signal d'échange de téléphone*)

Theodore N. Vail, Boston, Mass., and John A. Seely, New York, N. Y., U.S., 16th July, 1889; 5 years.

Claim.—1st. The combination of a central station and a substation united by an electrical conductor at the central station, a circuit changing device consisting of a switch plug normally forming part of said circuit at the substation, a gravity switch, a telephone branch, a bell branch, a generator of electricity and a switch for including said generator in the main circuit consisting of a pivoted arm operating a line contact, and a contact connected to said generator, whereby a change in the normal position of said switch at the substation, and of said apparatus at the central station produces a signal irrespective of the position of the gravity switch, substantially as described. 2nd. The combination of a central station and a substation, an electrical conductor uniting said stations, telephone instruments in said circuit at both stations, a flexible conductor at the central station normally resting upon a section of conductor to complete said circuit, a generator of electricity at the substation, and a switch for including said generator in the circuit, all arranged substantially as described, whereby a change in the normal position of the flexible cord sounds a signal at the substation. 3rd. The combination of two telephone stations, an electrical conductor uniting said stations, a fragment of said conductor containing an electromagnetic indicating instrument at each station, a device at one station, say the first, for connecting and disconnecting said fragment with respect to the main circuit, a generator of electricity and a device for connecting and disconnecting said generator with respect to said conductor at the second station, all arranged and operating substantially as described, whereby a variation in connection of the line fragment at the first station changes the circuit of the generator and sounds a signal at the second station.

No. 31,721. Packing Holder. (*Arrête-garniture.*)

Charles Jenkins, Boston, Mass., U.S., 16th July, 1889; 5 years.

Claim.—1st. The packing holder having a packing holding recess and a screw stud, and the packing disc to fit said recess having the hole or cavity *c*, two sides *e* of which are parallel, a nut *D* to fit said screw stud having a section *d* to fit the recess *c* of the packing, the shoulder *d*₂, and the section *d*₃, substantially as described. 2nd. The

combination of the nut D having the section *d*₃, shoulder *d*₂ and section *d* shaped as specified, with the packing C having the recess *c* shaped to receive the section *d*₁ of the nut, substantially as described.

No. 31,722. Machine for Making Paper Tubes. (*Machine à faire des tubes de papier.*)

Charles S. Tainter, Washington, D.C., U.S., 16th July, 1889; 5 years.

Claim.—1st. In a machine for making tubes from strips of paper or other material, the combination, with the rotatory core, of the stationary feed cams having oblique or helical faces for acting against the edges of the strips as they are wound upon said core, substantially as described. 2nd. The combination, with the rotatory core, of the stationary feed cams having oblique or helical acting faces, said cams being in different positions relative to the length of said core so that the strips will break joints, substantially as described. 3rd. The combination of the rotatory core, the feed cams for acting on the edge of the strips as they are wound, the reels, the vessel for glue or other adhesive substance between said reel and core, and the roller for applying a coating of glue to one of said strips, substantially as described. 4th. The combination of the rotatory core, the feed cams having helical edges for acting on the strips as they are wound upon said core, and the guide and tension for said strips, substantially as described. 5th. The combination of the core supported in bearings at one end only, and the feed cams for acting on the edges of the strips as they are wound upon said core, and pushing the tube as formed off the free end of said core, substantially as described. 6th. The combination, with the rotating core for winding strips of paper into the form of a tube, of the feed cams comprising a sleeve or cylinder having helical acting edges formed therein, one for each strip composing the tube, substantially as described. 7th. The combination of the rotatory core, the feed cams having helical acting edges, and the spring finger, substantially as described. 8th. The combination of the rotating core, the feed cams, the roller bearing against the meeting edges of the outer strip, and the spring for pressing said roller against the paper tube, substantially as described. 9th. In a machine for forming tubes from strips of paper or other material, the combination, with feeding devices for advancing the strips as they are wound, of the core or mandrel circular in cross-section where the tube is formed and changing gradually to the form of a polygon, substantially as described.

No. 31,723. Machine for Making Ices, Ice Cream, etc. (*Machine à faire les sorbets, les glaces, etc.*)

Lafayette D. Railsback, Indianapolis, Ind., U.S., 16th July, 1889; 5 years.

Claim.—1st. The combination, in a machine for making ice, of a freezing cylinder, a scraping knife and a device arranged above or in advance of said scraping knife to divide or crack the film of ice on said cylinder, substantially as described and for the purposes specified. 2nd. The combination, in a machine for making ice, of the freezing cylinder, a tank or hopper holding the liquid to be frozen, and an apron extending from the discharging point of said tank to near the surface of said cylinder. 3rd. The combination, in a machine for making ice, of a hollow cylinder having a hollow trunion, and a tank or hopper containing a supply of the refrigerant, provided with a tube or spout extending through said hollow trunion to inside of said cylinder, said tank or hopper being supported independently of said cylinder. 4th. The combination, in a machine for making ice, of the freezing cylinder, a liquid supply tank and an apron for conveying the liquid from said tank to the surface of said cylinder, said apron having corrugations diverging from the point where the liquid is discharged thereon to the edge whence it is discharged onto said cylinder. 5th. The combination, in a machine for making ice, of the freezing cylinder, and a roller having sharp corrugations resting close to, or against the surface of said cylinder, and adapted to divide the film of ice thereon, substantially as described. 6th. The combination, in a machine for making ice, ice cream, etc., of a refrigerating cylinder and means, substantially as described, for distributing the liquid to be frozen thereon and removing the frozen product therefrom, substantially as set forth.

No. 31,724. Evaporating Pan. (*Chaudière évaporatoire.*)

Joseph M. Dugan, Silver Springs, N.Y., U.S., 16th July, 1889; 5 years.

Claim.—1st. The combination, with an evaporating pan having an opening in one of its walls for the insertion and removal of the heating sections, of independent removable heating sections, each forming a separate steam receiving chamber capable of being inserted and removed through the opening in the wall of the evaporating pan, substantially as set forth. 2nd. The combination, with an evaporating pan provided with a steam supply manifold, and with an opening in one of its walls for the insertion and removal of the heating sections, of independent removable heating sections detachable connected with said supply manifold, whereby said sections can be removed through said opening for cleaning, and can be replaced without disturbing said supply manifold, substantially as set forth. 3rd. The combination, with an evaporating pan having in one of its walls an opening for the insertion and removal of the heating sections, of independent flat heating sections arranged with their flat sides adjacent to each other and made separately removable from the pan, substantially as set forth. 4th. The combination, with an evaporating pan provided with a steam supply manifold, and with an opening in one of its walls for the insertion and removal of the heating sections, of flat removable heating sections arranged with their flat sides adjacent to each other, and detachably connected with the supply manifold, substantially as set forth. 5th. The combination, with an evaporating pan provided with a steam supply manifold, and with

an opening in one of its walls for the insertion and removal of the heating sections, of independent heating sections detachably connected with the supply manifold, drip pipes connected with the tails of the heating sections, and stuffing boxes in the wall of the pan through which the drip pipes pass, substantially as set forth. 6th. The combination, with an evaporating pan provided with a steam supply manifold, and with an opening in one of its walls for the insertion and removal of the heating sections, of removable heating sections bearing against the supply manifold, and adjusting screws supported on the pan and bearing against the heating sections, whereby the latter are pressed against the supply manifold, substantially as set forth. 7th. The combination, with an evaporating pan, of flat heating sections, each composed of a row of heating pipes, and manifolds with which the pipes are connected, the several sections being independent of each other, and arranged with their flat sides adjacent to each other, and the pan being provided in one of its upright walls with an opening through which each section can be removed, substantially as set forth. 8th. The combination, with an evaporating pan, of flat removable heating sections, each composed of a row of heating pipes, and manifolds with which the pipes are connected, the several sections being independent of each other and arranged with their flat sides adjacent to each other, and a supply manifold secured to the pan and communicating with each heating section, substantially as set forth. 9th. The combination, with an evaporating pan, of flat removable heating sections, each composed of a row of heating pipes, and manifolds with which the pipes are connected, the several sections being independent of each other, and arranged with their flat sides adjacent to each other, and circulating passages arranged outside of the heating sections, and connecting the portions of the pan above and below the heating sections, substantially as set forth. 10th. The combination, with the evaporating pan, of removable vertical sections of heating pipes arranged side by side within the pan, and guide bars arranged in the pan underneath the sections, substantially as set forth. 11th. The combination, with the evaporating pan, of removable vertical sections of heating pipes arranged side by side within the pan, each composed of end manifolds, and connecting pipes, and beveled guide bars arranged in the pan and entering grooves in the lower ends of the manifolds, substantially as set forth. 12th. The combination, with the evaporating pan, of removable vertical sections of heating pipes arranged side by side within the pan, each composed of end manifolds and connecting pipes, a horizontal supply manifold communicating with the supply manifolds of the sections, drip pipes attached to the discharge manifolds of the sections, and packing boxes in the wall of the pan through which the drip pipes pass, substantially as set forth. 13th. The combination, with the evaporating pan, the sections of heating pipes, each provided with an end manifold, and a main manifold extending across the ends of the section manifolds and secured in the pan, of adjusting screws attached to the pan and bearing against the section manifolds, whereby the latter are pressed against the main manifolds, substantially as set forth.

No. 31,725. Measuring Apparatus for Liquids. (*Appareil de mesure de liquides.*)

Charles G. Molin, Brooklyn, N.Y., U.S., 16th July, 1889; 5 years.

Claim.—1st. The combination, with the bottle A having a tube B secured to the lower portion of its throat, and extending into said bottle, and a bulb also communicating with the interior of said bottle, of a detachable liquid receptacle I having at its bottom a tubular projection H constructed to fit in said throat, and a valve J in said projection, substantially as described. 2nd. The combination, with the bottle A having the tube B secured to the lower portion of its throat and extending into said bottle, and a bulb D having a valve G and communicating with the interior of said bottle, of a detachable liquid receptacle I having at its bottom a conical tubular projection II constructed to fit in said throat, and a valve J in said projection, substantially as described.

No. 31,726. Electric Conductor. (*Conducteur électrique.*)

Alfred A. Brooks, Cambridge, Mass., U.S., 16th July, 1889; 5 years.

Claim.—1st. An electric conductor consisting of a wire covered with a single ply jacket composed of a single set of longitudinal yarns or warps *b*, and two uniting woof or weft threads or yards *c*, *c*, which are both tightly wound around the said wire, and interwoven with all of the said warps in parallel courses or lines, said weft threads being alternated with the said warp threads, so that in the same course the thread *c* is beneath or inside of a warp thread when a thread *c* is above or outside of the same warp thread and *vice versa*, substantially as set forth. 2nd. An electric conductor consisting of a wire having an insulating layer or coating *d*, and a single ply tightly woven jacket or covering composed of a single set of longitudinal yarns or warps *b*, and two or more wefts interwoven with all the said warps, and extending around the conductor in parallel courses and passing alternately over and under the said warps, substantially as set forth. 3rd. An electric conductor consisting of a wire having a tightly woven single ply jacket composed of a single set of longitudinal warps *b*, and two or more wefts, each of which is interwoven with all of the said warps, and passing alternately over and under the same, said jacket having a waterproof coating *e*, substantially as set forth. 4th. An electric conductor consisting of a wire having an insulating layer or coating *d*, and a single ply tightly woven jacket composed of a single set of warp threads, and two or more weft threads, each of which is interwoven with all of the said warp threads, and said jacket having a waterproof coating *e*, substantially as set forth.

No. 31,727. Inking Ribbon Spool for Type Writers. (*Bobine-encrier pour les graphotypes.*)

Harvey Ray, Mobile, Ala., U.S., 16th July, 1889; 5 years.

Claim.—1st. An improved article of manufacture, an inking ribbon held at one end to, and wound upon a bobbin ready for transportation

and application to an inking ribbon spool of a type-writer, substantially as set forth. 2nd. An inking ribbon spool for a type-writer made with two separable sections, allowing renewal or substitution of the inking ribbon, substantially as herein set forth. 3rd. An inking ribbon bobbin provided with a clamp on its outer surface, and with an inwardly extending projection on its inner surface, substantially as described. 4th. The inking ribbon bobbin C formed of a plate bent into cylindrical form, and provided at one end with an in-bent lip c, and at the other end with a ribbon-clamp c', substantially as shown and described. 5th. The inking ribbon bobbin C provided at one end with an in-bent lip c, and at its other end with a clamp c', combined with an inking ribbon D held at one end by the clamp c' and wound upon the bobbin, substantially as herein set forth. 6th. The combination in an inking ribbon spool for a type-writer, of a side part A having a hub B slotted at b, a bobbin C fitted to said hub and having a tongue c entering said slot, and adapted to hold the end of the inking-ribbon, and an opposite side part E having a hub F fitting the hub B of part A, substantially as described for the purpose set forth.

No. 31,728. Separable Pulley. (*Poulie divisible.*)

Atwater E. Brockett, Kingston, Ont., 16th July, 1889; 5 years.

Claim.—1st. In combination with a separable pulley having parallel spokes E, E connected by bolts F, and a hub B having radial grooves 2, the removable bearings 3 inserted in said grooves and having two frictional gripping edges a, b, as and for the purpose set forth. 2nd. A separable pulley having parallel spokes E, E connected by bolts F, and a hub B having radial grooves 2, said grooves provided with edges c produced to constitute frictional bearings in contact with the pulley shaft, as and for the purpose set forth. 3rd. The combination, with the hub B having the grooves 2, of the removable bearings 3 having edges a, b, and the key or feather H inserted in the grooves, as set forth.

No. 31,729. Tensioned Air Motor.

(*Moteur atmosphérique à tension.*)

William Bowes, Pinkerton, Ont., 16th July, 1889; 5 years.

Claim.—The combination of the inflexible air reservoir I, the flexible air chambers 3 and 5, the suspended weight 14, and the standard and lever 9, 10 operated by the inflating and collapsing of said flexible chambers, as described and set forth.

No. 31,730. Treatment of Sewage and other Impure Liquids and Water for the Purification thereof, and for obtaining Products therefrom and Apparatus for these purposes.

(*Traitement des liquides et des eaux impures des égouts et autres pour les assainir et en tirer des produits, et appareil pour cet objet.*)

William Webster, jr., Lee, Eng., 16th July, 1889; 5 years.

Claim.—1st. The method of purifying sewage and other impure liquids by electrolytic action, by causing the liquid to flow through comparatively narrow channels in which it is brought in contact with negative electrodes of iron having very extended surfaces, and with extended positive electrodes of iron, the liquid being thereby subjected to the action of nascent ammonia evolved at the negative electrodes, and to the action of nascent oxygen and chlorine evolved at the positive electrodes producing both the precipitation of solid matter and the oxidation and purification of organic matter therein contained, substantially as described. 2nd. The method of purifying sewage and other impure liquids by electrolytic action by causing the liquid to flow through comparatively narrow channels in which it is brought in contact with negative electrodes of iron having very extended surfaces, and with extended positive electrodes of carbon, the liquid being thereby subjected to the action of nascent ammonia evolved at the negative electrodes, and to the action of nascent oxygen, and chlorine evolved at the positive electrodes producing both the precipitation of solid matter and the oxidation and purification of organic matter therein contained, substantially as described. 3rd. For effecting the purification of sewage or other impure liquid by electrolytic action, a reservoir or tank divided by partitions with narrow channels through which the liquid is made to flow, the partitions on each side of such channels being made of iron and constituting respectively the positive and negative electrode, connected with the positive and negative poles of a generator of electricity, substantially as described. 4th. A conduit for sewage or impure liquids made to act as electrolytic apparatus for precipitating and disinfecting the sewage flowing through, by constructing the said conduit of separate insulated sections constituting positive and negative electrodes, which are connected to the positive and negative poles of a generator of electricity, substantially as herein described. 5th. In apparatus for effecting the purification of sewage or other impure liquids by electrolytic action, such as above described, with electrodes built up of coke, substantially as herein described.

No. 31,731. Differential Gearing for Hoisting and other purposes. (*Appareil différentiel pour hisser et autres fins.*)

Richard Lavery, Boston, Mass., U.S., 16th July, 1889; 5 years.

Claim.—1st. In a differential gear apparatus for hoisting, a frame, a central rod, as B, the central gear C provided with a bearing I, and lifting sheave C' mounted loosely on said rod, the central gear D provided with bearing I', flange D² and shank D¹, combined with an operating wheel rotating upon the said bearings, a series of differential gears, as K, K¹, free to revolve upon shafts, as J, J¹, engaging respectively the central gears C, D, to operate substantially as described. 2nd. The frame A, the rod B, the central gear D, provided with a bearing I, a flange D², a shank D¹, a screw F and a

nut F¹ to secure the shank to the said frame, combined with the central rotating gear C, bearing I, lifting sheave C' permanently connected integral with the said gear and bearing and free to rotate upon the said rod, the operating wheel H mounted upon the said bearings, a series of shafts, as J, therein, and a series of differential gears, as K, K¹, on the said shafts J, the opposite ends of each gear engaging the said central gears C, D, to operate substantially as described. 3rd. In a differential gear hoisting apparatus, the frame or housing A provided with a pole, as E, through it centrally, in combination with the gear D provided with a bearing I', a flange D², and a shank D¹ to fit the said hole E, a screw F and nut F¹, whereby the said gear is made a fixture with the frame or housing A, and a rod B enlarged and provided with screws, and nuts G, G¹, as and for the purposes specified. 4th. In a differential gear hoisting apparatus, the frame A, the rod B, and central externally toothed gear C provided with bearing I, and lifting sheave C', both integral, mounted and free to revolve upon said rod B, the frame A¹ and central externally toothed gear D provided with bearing I', flange D², shank D¹, and screw F together with the nut F¹, whereby the said frame and gear are held together and the gear made non-revolving, in combination with the hollow annular operating wheel H provided with differential pinions K, K¹, and shafts J, J¹, the said operating wheel being mounted and free to revolve upon the aforesaid bearings I, I¹, as and for the purposes shown and specified. 5th. The frame or housing A, A¹, in combination with the fixed central gear D having the bearings I, flange D², and shank D¹ provided with screw F, the nut F¹, hollow annular operating wheel H, differential pinions K, K¹, shafts J, J¹, revolving central gear C¹ and bearing I', both integral with lifting sheave C', frame or housing A, centre rod B provided with nuts G, G¹, seating and unseating device W, W¹, lifting chain N, bolt and link L, M, sheave wheel R, tackle block and swivel hook S, T, cross-head and swivel hook U, V, hand operating chain Q, and guide O, O¹, as and for the purpose shown and specified. 6th. In a differential gear hoisting apparatus, the frame A, A¹, and central rod B, and a series of pairs of differential external toothed pinions made integral, one gear of each pair having a less number of teeth than the other, in combination with two central gears, one of which is integral with the lifting sheave and is adapted to revolve upon the said central rod, the other being fixed, and a hollow annular operating wheel mounted and free to revolve upon bearings integral with the aforesaid central gears, the series of differential pinions being mounted and free to revolve upon shafts passing through and supported by the sides or arms of the hollow annular operating wheel, and gearing simultaneously into the revolving and fixed central gears aforesaid, as and for the purpose specified. 7th. In differential gearing apparatus for hoisting the side frames and operating wheel, combined with a guide for the endless chain, the said guide being composed of two members O, O¹, one of which is integral with one side of the frame or housing of the machine, while the other member is secured to the first member and also to the frame or housing aforesaid, the guide being in the form of two segments of a circular flange joined together at their extremities and standing apart sufficiently to admit between them the said operating wheel having sockets upon its periphery, into which fit an endless chain, the guide enclosing the rim of one-half of the said operating wheel, substantially as shown and described.

No. 31,732. Method of Supplying New Milk to Centrifugal Separating Machines. (*Mode d'alimentation avec du lait frais des garde-lait centrifuges.*)

Sven Jonsson, Copenhagen, Denmark, 16th July, 1889; 5 years.

Claim.—1st. In centrifugal milk separators, the flange or collar F provided near its centre with an annular opening, this flange extending just far enough to ensure that the cavity between the flange and the bottom of the centrifugal machine opens direct to that region of the separator in which there is formed on the working of the machine a stratum of milk of specific gravity similar to that of the new milk which enters. 2nd. In centrifugal separating machines, the supply of new milk directly to that stratum of milk which during the working of centrifugal machine has a specific gravity similar to that of the new milk which enters.

No. 31,733. Draw-Head for Railway Cars. (*Tumpon de choc pour les chars de chemins de fer.*)

John J. Lappin, Toronto, Ont., 16th July, 1889; 5 years.

Claim.—1st. The draw-head A, with lengthened trip B extending into a recess b₂ in the floor of the draw-head, as shown and described and for the purposes set forth. 2nd. The compound seat b, b₁ in the back part of the mouth of the draw-head, as specified and described and for the purposes set forth.

No. 31,734. Hydrant. (*Borne-fontaine.*)

John Kayser, Seneca Falls, N.Y., U.S., 16th July, 1889; 5 years.

Claim.—1st. In a hydrant, the combination, with the tubular body having the drainage ports 5 and valve seat, and the hollow valve in said body having the circumferential flanges 15 completely filling said body, and perforations between said flanges, of a loose packing band having its ends overlapped located between said flanges over said perforations, as set forth. 2nd. In a hydrant, the combination, with the tubular body having the drainage ports 5, and a valve-seat, and the hollow valve B having circumferential flanges 15, and perforations between said flanges, of a loose packing band located between said flanges, and secured at one end to said valve, as set forth. 3rd. In a hydrant, the combination, with the tubular body having drainage ports 5, and valve-seat, and the hollow valve B having circumferential flanges 15, and perforations between said flanges, of a loose packing band located between said flanges and coiled around said valve more than once, as set forth. 4th. In a hydrant, the combination, with the tubular body having a valve-seat, and the drainage ports 5, and the hollow valve B having the circumferential flanges 15, and perforations between said flanges, of a loose packing band completely filling the space between said flanges, and coiled around said valve more than once and having one end secured thereto, as set forth.

No. 31,735. Art or Process of Preparing Vegetable Fibrous Material for Obtaining Fibre therefrom. (*Art ou procédé de préparation des matières végétales fibreuses pour en tirer la fibre.*)

James Mactear, Westminster, Eng., 16th July, 1889; 5 years.

Claim.—The process of degumming vegetable fibrous material and obtaining the clean fibre, consisting in submitting such material to the action of ammonia in the presence of sodium or potassium, hydrate carbonate, or borate in solution, and in subsequently washing the fibre, as set forth.

No. 31,736. Corset. (*Corset.*)

Moses K. Bortree, Henry B. Grady and Herchel K. Summers, Grand Rapids, Mich., U.S., 16th July, 1889; 5 years.

Claim.—1st. In combination with a corset, of a wire, or rigid strip of material *b*₁, and spaces *b*₂, substantially as described. 2nd. In combination, with a corset, a wire, or rigid strip of material *b*₁, the loops *b*₂, and spaces *b*₃, substantially as described. 3rd. In combination, with a corset, a wire or rigid strip of material *b*₁, said wire plated with non-corrosive metal, of spaces *b*₂, and loops *b*₂, substantially as described. 4th. As an article of manufacture, the strip of loops *D*, with the wire *b*₁ embraced therein, the whole adapted for attachment to an article of wearing apparel.

No. 31,737. Metallic Crest Tile Lightning Rod. (*Paratonnerre avec tuile métallique d'ornement.*)

Clark B. Nelson and Albert Muhleisen, Crawfordsville, Ind., U.S., 16th July, 1889; 5 years.

Claim.—1st. The electrical conductor herein described, consisting of the combination of the metallic crest-tile, the vertical points *B* engaged therewith and ground connections, substantially as and for the purpose described. 2nd. The metallic crest-tile herein described, consisting of a rib *C*, provided with diverging flanges at the base, said rib and flanges formed of a single piece of metal, folded together and cut in ornamental shape; substantially as described. 3rd. A metallic crest-tile forming part of the electric connections of a house, with the ground serving as a part of the lightning protective system thereof, and consisting of the diverging flanges *B* forming the saddle, the vertical flange *C* united with the saddle, and provided with the points *D* to attract electricity, and the pointed rod *E* rising from said tile, substantially as specified.

No. 31,738. Machine for Rubbing Types.

(*Machine a frotter les caractères.*)

The Eaton Type Finishing Machine Company, Jersey, N.J., (assignee of George S. Eaton and James C. Birch, Brooklyn, N.Y.), U.S., 16th July, 1889; 5 years.

Claim.—1st. The combination in a machine for rubbing type, of a table for receiving the types, an inclined feeding slide down which the types are passed, a bed plate at right angles to the feeding slide, two metallic equalizers attached to the bed, and screws for adjusting one of said equalizers to vary the width of the opening between them and adapt the machine to different thicknesses of types, and cutters attached to the upper surfaces of the equalizers for removing the burs at the bases of the letters, and a pusher for moving the types along between the equalizers, the opposite faces of the equalizers being flat, smooth and parallel so as to straighten and render true the bodies of the types and firmly support such types, while the burs are being removed by the cutters, substantially as specified. 2nd. The combination in a type rubbing machine, of a bed plate, two metallic equalizers attached to the bed plate, and screws for adjusting and holding one of the equalizers, the faces of the equalizers being smooth and parallel, a reciprocating carriage beneath the bed plate, a changeable pusher connected therewith and extending up through a slot in the bed plate, cutters attached to the upper edges of the equalizers and acting to remove the burs at the bases of the letters, a feeding slide at right angles to the bed plate down which slide the types are passed in succession, and a detainer, and means for moving the same so as to allow the types to pass down in succession at the proper time in relation to the movement of the pusher, substantially as set forth. 3rd. The combination in a type rubbing machine, of a bed plate, a feeding slide perpendicular to the bed plate, two metallic equalizers having straight, smooth and parallel faces, and a depression in the face of one of the equalizers in the line with the feeding slide to give space for the types to pass in freely between the equalizers, a pusher between the equalizers, and cutters upon the edges of the equalizers for removing the burs at the bases of the letter while the types are straightened and smoothed, by being passed through between the parallel faces of the equalizers, substantially as set forth. 4th. The combination, with the bed and the equalizers between which the types are passed, the pusher and the cutters for removing the burs, of a feeding slide down which the types are supplied, the steadying finger *k* above the feeding slide, a hinge *k*₁ at the lower end of the finger, by which the same is attached to the equalizer *F*, the detainer *L* and means for moving the same to allow the type to pass down the feeding slide, substantially as set forth. 5th. The combination in a machine for rubbing type, of two equalizers having smooth flat faces, a bed to which such equalizers are attached, and screws for adjusting and holding one of such equalizers, a changeable pusher and mechanism for reciprocating the same longitudinally between the equalizers, adjustable cutters fastened upon the equalizers for removing the burs at the bases of the letters, a feeding slide perpendicular to the bed plate, a curved raceway at the end of the channel between the equalizers, and a removable rule for receiving the line of types, substantially as set forth.

No. 31,739. Art of Knitting Stockings.

(*Art de tricoter les bas.*)

William Esty, Charles A. Busiel, John T. Busiel and Frank E. Busiel, Laconia, N.H., U.S., 16th July, 1889; 5 years

Claim.—1st. The method of forming full fashioned stockings, which consists in taking up the full number of stitches required to form the top of the leg, knitting a few circular courses, dropping a portion of the stitches, knitting courses upon the remaining needles by feeding each yarn to the same row of needles in both directions throughout said courses, thereby forming two short sections of flat webs, then throwing out of action one half of the remaining needles, knitting a toe-bulge by knitting a given number number of courses back and forth and narrowing, and then a corresponding number of like courses, and widening, at the same time uniting the widened portion to the narrowed portion, then throwing into action the needles last thrown out of action, then knitting a sufficient number of circular courses to form the greater portion of the foot, then widening for several courses to form a gusset, or gore in the bottom of the foot, then knitting the heel-bulge in the same manner as the toe-bulge and upon the same side of the tube as the gusset or gore, then knitting a series of circular courses to form the ankle, then widening upon the same side of the tube as the heel-bulge till all the needles first thrown out of action are again in operation, then knitting a series of circular courses using the whole number of needles to complete the desired length of the leg, then throwing out of action and dropping the stitches from the same needles that were first thrown out (repeating the foregoing operations as many times as there are stockings required) and then severing the sections and uniting by seaming the disconnected side of the toe-bulge to the foot portion. 2nd. The herein described improvement in the art of knitting stockings in continuous web or connected series, whereby the top of the leg forming part of one stocking may be accurately severed from the toe forming portion of the next stocking of the web, with the minimum of waste, which consists in knitting several courses between the leg and toe portions of different stockings to form two short flat webs, each having two selvage edges to thereby designate the courses within which the web may be divided.

No. 31,740. Means of Ornamenting Watch Case Centres and other like articles. (*Moyens d'ornementer les boites des montres et autres objets semblables.*)

Robbins and Appleton, New York, (assignees of Adolph W. Hofman, Brooklyn, N.Y., U.S., 16th July, 1889; 5 years.

Claim.—1st. The combination of a rotary embossing roll or die having an engraved periphery, a pivoted holder, whereby said die may be inclined or moved laterally, a work holder or chuck, and means for imparting to said chuck reversing rotary movements of predetermined length, and thereby keeping the relief lines of the die in operative engagement with the impressions made by it in the case centre or other article held by the chuck, as set forth. 2nd. The combination, with the embossing roll, its holding devices, and the chuck *b*, of the gear *g* affixed to the shaft carrying said chuck, the rack *r* engaged with said gear, the counter shaft *n*, and the pitman *s* connecting said rack with an eccentric wrist pin on a crank wheel on the shaft, as set forth.

No. 31,741. Suspender. (*Bretelle.*)

Julia E. Attwood, Swanton, Vt., U.S., 17th July, 1889; 5 years.

Claim.—1st. Suspenders comprising shoulder straps connected at the back, a jointed connecting strap pivotally attached, substantially as set forth. 2nd. In suspenders, the combination, of the shoulder straps *A*, cover strips *B*, ends *A*₁ provided with looped and buckled ends *F* within bearer *E*, and jointed connecting strap *C* pivotally connected to said cover strips *B*, substantially as set forth.

No. 31,742. Organ. (*Orgue.*)

Henry James, Waterbury, Vt., U.S., 17th July, 1889; 5 years.

Claim.—1st. A reed tube open at one end and closed at the other, and having an eschallot at one side over or through which vibrates a single reed, substantially as shown and described. 2nd. The combination, with a wind chest, of reed tubes secured in the said wind chest, and provided with vibrators operating over or through eschallots in the said tubes, and a valve for the open end of each of the said tubes and actuated by a key, substantially as shown and described. 3rd. The combination, with a wind chest and resonating channels, of reed tubes or reeds secured in the said wind chest, and provided with vibrators operating over or through eschallots in the said tubes, the latter opening into the said resonating channels, substantially as shown and described. 4th. The combination, with a wind chest and resonating channels, of reed tubes or reeds secured in the said wind chest, and provided with vibrators operating over or through eschallots in said tubes, the said reed tubes or reeds opening into the said resonating channels, and a valve actuated by a key operating over a wind vent in each of the said resonating channels, substantially as shown and described.

No. 31,743. Paper Machine. (*Machine à papier.*)

Vincent G. Hazard, Wilmington, Del., U.S., 17th July, 1889; 5 years.

Claim.—1st. In combination with the frame of a paper machine, having holes *a* formed in its upper face to receive the pedestals of the lower roll, removable pedestal *B* for the lower rolls provided with projection *b* formed to fit in the holes *a* of the frame standard situated on the frame on one side, and at each end of the press-rolls, arms *D* pivoted at one end to said standards, and having journal-bearings at their outer ends, and press-rolls journaled on the pedestals and in the journal-bearings of the arms *D*, all substantially as and for the purpose specified. 2nd. In combination with the press-

rolls of a paper-machine, standards C situated at each end and to one side of the rolls, arms pivoted at one end to said standards, journal-bearings for the upper roll secured at the other ends of said pivoted arms, lifting-rods E secured to said pivoted arms at one end, and threaded at their other ends, nuts *g*, with hand-wheels G screwing into said threaded ends of the lifting-rods, and supporting-shoulders on the upper ends of the standards C to hold the nuts *g* stationary, substantially as and for the purpose specified. 3rd. In a device for supporting and adjusting the upper press-roll of a paper-machine, substantially as shown and described, standards C situated at each end and to one side of the rolls, in combination, with notches *e* formed in the top of said standards, double arms D pivoted on both sides of the standards, and having journal-bearings for the upper roll formed in their outer ends, lifting rods E pivoted at their lower ends to arms D, and having a screw-thread formed on their upper ends, sleeves F having trunnions *f*, resting the croches *e*, of the standards, and nuts *g* having hand-wheels G screwing onto the threaded ends of rods E and resting on the sleeve F, all substantially as and for the purpose specified. 4th. In a device for supporting and adjusting the upper press-roll of a paper-machine, substantially as shown and described, the combination, of the standards C, arms D pivoted to the standards at one end, journal-bearings for the upper roll at the outer end of said arms, the removable bearing-plate D₁, lugs *d*, and brackets D₂ attached to said bearing-plate, and the weight-rods and lever, said rods being secured to the lug *d*, all substantially as and for the purpose specified.

No. 31,744. Hose Coupling. (*Joint de boyau.*)

Spain E. Pearce and George W. Merrill. Algonac, Mich., U.S., 17th June, 1889; 5 years.

Claim.—In a hose coupling consisting of two like members, the combination of the grooved coupling hooks E, the flat spacers H, and the coupling flanges L alternately disposed around the head of each coupling, of the elastic rings L set angularly around the mouth of each of the coupling halves, and the locking device, such as the spring top M, substantially as and for the purpose described.

No. 31,745. Railway Coach.

(*Voiture de chemin de fer*)

Robert S. C. Fuller, New York, N.Y., U.S., 17th July, 1889; 5 years.

Claim.—1st. The combination, with a rigid platform, of an auxiliary platform pivoted thereon, substantially as shown and described. 2nd. The combination, with a rigid platform, of an auxiliary platform pivoted thereon, and capable of independent movement, substantially as shown and described. 3rd. The combination, with a rigid platform, of an auxiliary platform pivoted thereon capable of independent movement, and of greater length than the fixed platform, substantially as shown and described. 4th. The combination, with a rigid platform, of an auxiliary platform pivoted thereon and capable of independent movement, and provided with an opening in the forward end, and a door covering said opening capable when open of exposing the drawhead, substantially as shown and described. 5th. The combination, with a rigid platform and a spring at the rear of the same, of an auxiliary platform pivoted upon the fixed platform capable of independent movement, and bearing against the said spring, substantially as shown and described. 6th. The combination, with a rigid platform and a spring pivoted at the rear of the same, of an auxiliary platform pivoted upon the fixed platform, slotted at the pivotal point, to have longitudinal movement, the said platform being capable of independent movement, and having a bearing against said spring, substantially as and for the purpose specified. 7th. The combination, with the bottom of a railway coach, provided with a horizontal recess in the upper face, a platform rigidly secured to the said bottom, and a spring pivoted in the floor recess, of an auxiliary platform pivoted upon the fixed platform capable of independent movement, and having the rear end in contact with the said spring, substantially as shown and described. 8th. The combination, with the bottom of a railway coach provided with a horizontal recess in the upper face, a platform secured to the said bottom, and a spring pivoted in the floor recess, of an auxiliary platform pivoted upon the fixed platform capable of independent movement, and contact with the said spring, and wear plates secured to the end of said platform at each side of the centre, all combined for operation substantially as shown and described. 9th. The combination, with the bottom of a railway coach provided with a horizontal recess in the upper face having an irregular rear wall, a platform rigidly secured to the said bottom, and a spring pivoted in the floor recess, of an auxiliary platform of greater length than the fixed platform, pivoted to the rear, capable of independent movement, and bearing against said spring, diagonal wear plates secured to the rear end of the platform, one at each side of the centre, and provided with a recessed under face, and a door hinged to the pivoted platform at the forward end adapted to cover the recess produced therein, all combined for operation substantially as shown and described. 10th. The combination, with the bottom of a railway coach, provided with a horizontal recess in the upper face having an irregular rear wall, a platform rigidly secured to the said bottom, a block pivoted in the floor recess near the centre, and a bow spring rigidly secured to the said block, of an auxiliary platform pivoted to the fixed platform and having a movement independent thereof, and bearing against the said spring, a friction roller journalled in the base wall of the floor recess in contact with the pivoted platform, and wear plates secured to the rear of the platform, one plate at each side of the centre, the said plates provided with a recess in the under face to receive the ends of the bow spring, all combined for operation substantially as shown and described. 11th. The combination, with a rigid platform, of an auxiliary platform pivoted thereon of greater length than the fixed platform, and means substantially as shown and described, for supporting the outer projecting ends of the pivoted platform, as and for the purpose specified. 12th. The combination, with a rigid platform, of an auxiliary platform pivoted thereon capable of independent movement, and of greater length than the fixed platform, and fingers secured to the

end sills of the fixed platform, adapted for contact with the under face of the projecting portion of the pivoted platform, all combined for operation substantially as shown and described. 13th. The combination, with a rigid platform, and fingers horizontally secured to the end sill of the same, and an opposed platform, the upper surface of which is recessed to receive said fingers, of an auxiliary platform pivoted upon each fixed platform, having their ends projected beyond the sills above the fingers, to contact with each other, substantially as shown and described. 14th. The combination, with a rigid platform and a spring pivoted at the rear of the same, of an auxiliary platform pivoted upon the fixed platform capable of independent movement, and having a bearing against said spring, and horizontal fingers attached to the end sill of the fixed platform, adapted for engagement with the under face of the pivoted platform, substantially as shown and described. 15th. The combination, with a rigid platform, a spring pivoted to the rear of the same, and graduated fingers horizontally secured to the end sill of the fixed platform, of an auxiliary platform pivoted upon the fixed platform, capable of independent movement and of greater length than the said fixed platform, and slotted for contact with the said spring, all combined for operation substantially as shown and described. 16th. The combination, with a fixed platform provided with an end sill having a recess at each side of the centre, and ribs formed upon the recessed face, of an opposed fixed platform, fingers horizontally secured to the end sill of the latter platform adapted for contact with the said recessed sill, and an auxiliary platform pivoted upon each of the fixed platforms having square abutting outer ends projected beyond the sills of the said fixed platforms and above the said fingers, all combined for operation substantially as shown and described. 17th. The combination, with a railway coach provided with a fixed platform, and an auxiliary platform pivoted upon the fixed platform, of a folding gate attached to one side of the coach near each end, and adapted to project over the platform of the adjacent coach, and to be secured to said coach, substantially as shown and described. 18th. In a railway coach, the combination, with a body provided with side recesses at each end, a fixed platform and an auxiliary platform pivoted upon the fixed platform, of a folding gate secured within one of the side recesses adapted to travel upon the platform, and a spring-actuated latch secured in the opposite side recess, all combined for operation substantially as shown and described. 19th. In a railway coach, the combination, with a body provided with side recesses at each end, a fixed platform and an auxiliary platform pivoted upon the fixed platform, of a folding gate secured within one side recess, a horizontal spring-actuated latch secured in the opposite side recess, and a second folding gate pivoted upon the ends of the coach adjacent to the recess carrying the latch, all combined for operation substantially as shown and described. 20th. In a railway coach, the combination, with a body provided with side recesses at each end, a fixed platform and an auxiliary platform pivoted upon the same, of a folding gate secured within one side recess, a spring-actuated latch held within the opposite recess, a second folding gate pivoted upon each end of the coach contiguous to the spring-actuated latch, and a third folding gate secured to the end of the coach hood, substantially as shown and described. 21st. In a railway coach, the combination, with a body provided with side recesses at each end, a fixed platform, and an auxiliary platform pivoted to the fixed platform and extending beyond the same, of a folding gate secured within one of the side recesses of the coach, a spring-actuated latch secured within the opposite recess, a second folding gate pivoted at each end of the coach, a third folding gate hinged to the end of the coach hood, provided with a locking device at the lower end adapted for contact with the outer end of the pivoted platform, and means, substantially as shown and described, for securing the end gate in a horizontal position beneath the hood, as and for the purpose specified. 22nd. In a railway coach, the combination, with a body provided with a pocket formed in each end, and a fixed platform, of an auxiliary platform pivoted upon the fixed platform, and a brake device located within the said pocket, substantially as and for the purpose specified. 23rd. In a railway coach, the combination, with a body provided with side recesses at each end, a fixed platform, a pocket in each end adjacent to one of the said recesses, and an auxiliary platform pivoted upon the fixed platform, of a folding gate secured within one side recess, and a latch horizontally held in the opposite side recess, a second folding gate pivoted at each end of the coach, a third folding gate hinged to the end of the coach hood, provided with a locking device adapted for contact with the outer end of the pivoted platform, a brake device located within the pocket of the body, and means, substantially as shown and described, for retaining the end gate in a horizontal position beneath the hood, substantially as and for the purpose specified. 24th. In a railway coach, the combination, with a body having a bottom provided with a horizontal recess in the upper face, a platform rigidly secured to the bottom, and a spring pivoted in the floor recess, of an auxiliary platform pivoted upon the fixed platform of greater length than the fixed platform capable of independent movement, and having the rear end in contact with the said springs, a sliding folding gate secured at one side of the coach body adapted to travel upon the auxiliary platform, a latch attached to the opposite side of the body, a brake device located in a pocket formed in the end of the coach body, a second folding gate pivoted to each end of the coach, and a third folding gate pivoted to each end of the coach, with means, substantially as shown and described, for locking the end gate in a vertical and in a horizontal position, as and for the purpose specified. 25th. The combination, in a railway coach provided with doorways having a double spaced partition at one side, of two sliding doors located between the partitions, one door provided with a transverse groove extending nearly from side to side, and the other door having secured thereto a lug capable of entering and sliding in the said groove, substantially as shown and described. 26th. In a railway coach, the combination, with a body provided with a pocket at each end, doorways having a double spaced partition and fixed platforms, of an auxiliary platform pivoted upon each of the fixed platforms, a brake device located within the said pocket, sliding doors located between the said partitions, one door provided with a transverse groove extending essentially from side to side, and the other door with a lug capable of entering the said groove and of sliding therein, all combined for operation as and for the purpose specified.

No. 31,746. Syringe for Hand Fire Extinguishers. (*Lance pour les extincteurs d'incendie à main.*)

Albert N. Pitney, Washington, D.C., U.S., 17th July, 1889; 5 years.

Claim.—1st. The combination of a cylinder having a screw-threaded nozzle with the detachable piston, the removable screw-threaded piston rod, the handle and its washer, these being close to the cylinder-head when the rod is screwed into the nozzle, substantially as described. 2nd. The combination of the cylinder having a perforated head and a screw-threaded nozzle, with the removable piston rod provided with a collar or stop, and screw on its end, a washer between the collar and nozzle, a handle on the rod, and a washer between the handle and the cylinder head, the handle and its washer being normally close to the cylinder head when the rod is screwed into the nozzle, substantially as described. 3rd. The combination of the cylinder with the detachable piston provided with spring-teeth, the rod provided with a groove for engaging with the teeth, and also provided with a collar and screw thread on its end, a washer between the collar and cylinder, a handle on the rod, and a washer between the handle and the cylinder-head, substantially as shown and described.

No. 31,747. Telephone Central Station Apparatus. (*Appareil de bureau central de téléphone.*)

Theodore N. Vail, Boston, Mass., and John A. Seely, New York, N.Y., U.S., 17th July, 1889; 5 years.

Claim.—1st. The combination of an aggregate number or series of electrical circuits, connecting a central station with a series of substations, a telephone instrument at each substation, at the central station a series of spring jacks or circuit changers, one for each circuit located in close proximity on one board, two or more groups or subdivisions of said circuits separated from each other located at said board, each having a second switch or circuit changer co-operating with the switches or circuit changers of the first-named series, and located in close proximity thereto, whereby any circuit of the first-named series and any circuit of either subdivision may be connected together. 2nd. The combination of an aggregate number or series of electrical circuits connecting a central station with a series of substations, telephonic instruments at each substation at the central station, a series of switches or circuit changers, one for each circuit, two or more separated groups or subdivisions of said circuits, each having a switch or circuit changer co-operating with the switches or circuit changers of the first-named series, but located on the same board in proximity thereto, whereby any circuit of the first-named series and any circuit of either subdivision may be connected together, and a receiving telephone common to the circuits of each group or subdivision to receive calls or communications therefrom. 3rd. The combination of an aggregate number or series of electrical circuits connecting a central station, with a series of substations, a telephonic instrument at each substation at the central station, a series of spring jacks or circuit changers, one for each circuit fixed in close proximity, two or more groups or subdivisions of said circuits separated from each other but at the same board, each circuit of a group terminating in a flexible conducting cord, and a jack plug co-operating with the spring jacks of the first-named series and normally resting in close proximity thereto, whereby any circuit of the first-named series may be connected with any circuit of either group or subdivision. 4th. At a telephone station, a switch board having the form or outline of a Greek cross, an aggregate number of electrical circuits, each circuit uniting a central station and one substation, a series of electrical connections, one for each circuit, located on said switch board, means for connecting circuits in pairs, eight subdivisions or groups of said circuits, eight electro-magnetic receiving instruments, one for each group, each instrument being common to all circuits of its group, and eight positions of support for eight operators, one for each group, said positions being so located that one group and the aggregate number of circuits are accessible to an operator therefrom. 5th. The combination of two or more switch boards, each having the form or outline of a Greek cross, duplicate electrical connections with an aggregate number of circuits on said boards, means at each board for electrically connecting circuits together, eight different subdivisions or groups of said circuits at each board, and separate indicating devices for each group, the whole being so arranged that eight operators may be assigned to each board, one operator to a group, each operator being in a position of support accessible to one group and to one and the same series of connections with the aggregate number of circuits. 6th. The combination of an aggregate number or series of electrical circuits connecting a central station with a series of substations, a telephonic instrument at each substation at the central station, a series of duplicate switches or circuit changers in each circuit of the aggregate number, one switch for each circuit being located upon each, of a series of boards or frames in close proximity, two or more groups or subdivisions of said circuit located upon each board or frame, each circuit of each group having a second switch or circuit changer, said groups being separated from each other but located in close proximity to the switches connected with the aggregate number of circuits, the number of boards or supports being equal to the aggregate number of circuits divided by the product of the number of groups at a board into the number of circuits in a group. 7th. The combination of an aggregate number or series of electrical circuits connecting a central station with a series of substations, a telephonic instrument at each substation, at the central station a series of spring jacks or circuit changers, one for each circuit, fixed in close proximity, two or more groups or subdivisions of said circuits separated from each other but at the same board, each circuit of a group terminating in a flexible conducting cord, and a jack plug to co-operate with the spring jacks of the first-named series, and normally resting in close proximity thereto, a receiving telephone common to each circuit of a group, and a ringing off annunciator in each such circuit. 8th. At a telephone station, the combination, of a metallic circuit consisting of two substantially parallel wires or conductors united at or near their terminals, a switch or circuit changer located in said circuit interme-

diating said terminals, two pairs of fixed contacts and one pair of movable contacts equally divided between and normally forming part of the circuit of both wires, a third pair of fixed contacts and a second pair of movable contacts, a generator of electricity having its opposite poles connected to one pair of said contacts, and a base of insulating material upon which the two pairs of movable contacts are located, all said contacts being so located with respect to each other that a predetermined change in position of said insulating base removes a fragment of the circuit and substitutes said generator therefor. 9th. At a telephone station, the combination of a metallic circuit consisting of two substantially parallel wires or conductors united at or near their terminals, two switches or circuit changers located in said circuit intermediate said terminals, each switch consisting of two pairs of fixed contacts, one pair of movable contacts equally divided between and normally forming part of the circuit of both wires, a third pair of fixed contacts, and a second pair of movable contacts, a generator of electricity having its opposite poles connected to one pair of contacts of each switch, and a base of insulating material for each switch upon which the two pairs of movable contacts are located, the contacts composing the two switches occupying reversed positions respectively, and the contacts of each switch being so located with respect to each other that a predetermined change position of one of said insulating bases divides the line, and substitutes the generator for one half or section thereof, while a similar change in position of the second insulating base divides the line and substitutes the generator for the other half or section.

No. 31,748. Telephone Central Station Apparatus. (*Appareil de bureau central de téléphone.*)

Theodore N. Vail, Boston, Mass., and John A. Seely, New York, N.Y., U.S., 17th July, 1889; 5 years.

Claim.—1st. A spring jack consisting of two or more severable contact points, an opening or passage to such points for the insertion of a jack plug, and a shield or dust guard constructed of suitable material, to shed or deflect falling dust or dirt, movably supported between the mouth of the opening or passage and the severable contact points. 2nd. In a spring jack, the combination of two or more severable contact points, an opening or passage to such points forming a plug socket, and a shield or dust guard forming an electrical contact for the said plug, all arranged substantially as described. 3rd. A switch board consisting of a frame or support, two series of blocks of insulating material fitting into said frame or support located in two parallel planes, a series of electrical instruments composing the operative mechanism of a switch board, such as spring jacks, having free terminals located in one series of blocks, one or more in each block, a series of electrical contacts having free terminals located in the second series of blocks in position to register with the terminals of the first series, and a series of electrical conductors connected to the second series of contacts, one conductor for each contact. 4th. The combination in a switch board of two or more insulated electrical contacts located in a plug socket, having an eccentric geometrical outline or formation, a switch plug of similar geometrical outline or formation, having one or more insulated electrical contacts in position to register with the first-named contacts when said plug is in its normal position, and means for automatically returning such plug to its normal position when free to move, substantially as described. 5th. A switch board composed of a frame or support, one or more electrical instruments located in said frame having two or more free terminals, one or more portable blocks or sections of insulating material fitting into said frame, two or more conducting sections fixed in said blocks, their free terminals in position to register with the free terminals of the said electrical instruments, and wires or conductors connected to said conducting sections, substantially as described.

No. 31,749. Telephone Central Station Apparatus. (*Appareil de bureau central de téléphone.*)

Theodore N. Vail, Boston, Mass., and John A. Seely, New York, N.Y., U.S., 17th July, 1889; 5 years.

Claim.—1st. The combination of a central station, a series of substations, a series of metallic circuits, one for each substation connected in parallel at said central station, a telephone instrument for each circuit at the substation, a receiving telephone at the central station in a local circuit having fixed electrical contacts, two separate contacts for each metallic circuit, and a suitable device for separately connecting and disconnecting the two terminals of each metallic circuit with the terminals of the local circuit. 2nd. The combination of a series of substations, a central station, a series of metallic circuits, one for each substation, a telephone instrument for each circuit at the substation, a receiving telephone at the central station, a local circuit having fixed electrical contacts in which the receiving telephone is permanently located, a flexible cord forming the terminal of each circuit, and a double contact switch plug for each cord, having electrical contacts registering with the fixed contacts of the local circuit and normally resting thereon, whereby all circuits are connected in parallel with the receiving telephone, and any circuit may be connected and disconnected therewith independently.

No. 31,750. Telephone Substation Apparatus. (*Appareil de bureau intermédiaire de téléphone.*)

Theodore N. Vail, Boston, Mass., and John A. Seely, New York, N.Y., U.S., 17th July, 1889; 5 years.

Claim.—1st. The combination at a telephone station, of a switch or circuit changer consisting of a pivoted arm connected with the main line, an electrical contact connected with a main line branch containing a telephone, a second electrical contact connected with a main line branch containing an electro-magnet for operating a call or signal, an electrical contact connected to a generator of electricity,

an electrical contact connected to the main line, and means, substantially as described, for temporarily connecting the two last-named contacts upon movement of the arm in one direction only. 2nd. At a telephone station, a switch or circuit changer consisting of a pivoted arm forming a support for the telephone, and capable of movement in two directions, a retractor for producing one movement, the gravity of the telephone when placed thereon producing the other movement, a main line connected to said arm, an electrical contact connected to a main line branch containing a telephone, and a contact connected to a main line branch containing an electro-magnetic signalling instrument, in combination with two additional contacts, one of which is connected to the main line, the other to a generator of electricity, and a tumbler lever temporarily forming an electrical connection between the last-named contacts upon a movement of the arm in one direction only. 3rd. At a telephone station, a switch or circuit changer having a contact with the main line, a contact with a telephone branch, and a contact with a bell branch, combined with a second switch or circuit changer having two contacts, the first connected to a generator of electricity, and the second to the main circuit, whereby when the second switch is operated the generator and main line are connected during the process of calling and preliminary to conversation. 4th. The combination at a telephone station of a main line, a contact varying telephonic transmitter, a local battery for said transmitter, an electrical connection from one side of said battery to the main line, and a switch or circuit changer having a fixed contact, and a movable contact, and an electrical connection from one of said points to the battery, and from the other contact to the line, all arranged substantially as described, whereby the operation of the switch includes the said battery in the line for the purpose of signaling. 5th. The combination at a telephone station, of a mainline, a branch line containing a bell or signaling instrument, a second branch containing a contact varying telephone transmitter, a local circuit therefor, means for connecting either of said branches with the main line, a supplementary switch or circuit changer embracing a pair of circuit closing points in the local circuit, a pair of circuit closing points in the transmitter branch, and a movable arm normally in position to close both said pairs of points, a battery contact, and a main line contact electrically united by the operation of said switch.

No. 31,751. Duplex Sight Feed Lubricator for Steam Engines. (*Graisseur à double indicateur pour machines à vapeur.*)

Warren H. Craig, Lawrence, Mass., U.S., 18th July, 1889; 5 years.

Claim.—1st. A sight-feed lubricator provided with one or more partitions *n*, each having in it a small opening or hole *h*, substantially as and for the purpose set forth. 2nd. A lubricator provided with a duplex oil reservoir A, a water pocket H, the tubular projections F, F', and the conduits I, I, arranged substantially as herein shown and described. 3rd. A lubricator provided with a duplex oil reservoir, a water pocket in the upper part thereof, the projections F, F' provided with a glass pane or window, and the conduits I, I leading from the pocket into the projections, and having the passages close to the panes or windows, and leading into each side of the oil reservoir, as set forth. 4th. A lubricator provided with a duplex oil reservoir, a water pocket, a sight-feed for each part of the oil reservoir, and a conduit connecting the pocket with each sight-feed chamber, and being connected with each part of the oil reservoir, as set forth. 5th. In a sight-feed lubricator, the sight-feed chamber and projection, in combination with the conduit I having its outer end located close to the glass of the projection, such outer end being widened and concaved at its top, front and bottom, as set forth. 6th. A lubricator provided at the top of its condenser with the trap consisting of the chamber *u* and passage *v* alongside each other, and communicating with each other, the chamber having the branch pipe X, and the passage being adapted to the top of the condenser, as set forth.

No. 31,752. Book Binding. (*Reliure.*)

John J. Sullivan and Thomas W. Graydon, Cincinnati, Ohio, U.S., 18th July, 1889; 5 years.

Claim.—1st. The above described process of binding together the leaves or signatures of a book without stitching, by cutting grooves across their edges, and inserting liquid glue or any suitable adhesive substance, substantially as and for the purpose described. 2nd. The above described process of book-binding without stitching, consisting, in grooving the edges or backs of the leaves, inserting glue in the grooves to hold the leaves together and attaching back, substantially as and for the purpose described.

No. 31,753. Oil Spray Lamp for Lighting and Heating purposes. (*Lampe à jet d'huile pulvérisée pour l'éclairage et le chauffage.*)

George Rose, Archibald Baird and Matthew B. Baird, Glasgow, Scotland, 18th July, 1889; 5 years.

Claim.—1st. In oil spray lamps for lighting and heating purposes, a burner wherein a chamber or casing which constitutes an oil well, and which has a spraying nipple fitted in its bottom or side, is combined with a steam expansion chamber, substantially as hereinbefore described. 2nd. In oil spray lamps for lighting and heating purposes, the combination, with a burner having a chamber or casing which constitutes an oil well, of a spraying nipple fitted in the bottom or side of said chamber or casing, and of a steam generating coil pipe or tube which is heated by the flame issuing from the burner, substantially as hereinbefore described. 3rd. In oil spray lamps for lighting and heating purposes, the combination, with the burner B, of a cover, such as M, capable of being fitted on the upper end of the burner, substantially as hereinbefore described. 4th. In oil spray lamps for lighting and heating purposes, the combination, with the burner B, of the mixing chamber N having a number of air holes N₁ in it, substantially as hereinbefore described. 5th. In oil spray

lamps for lighting and heating purposes, a steam generating coil pipe or tube, formed at its lower end in a number of close coils or turns which surround and are heated by the flame issuing from the burner, and which then extends straight up to the top or other part of the flame, where it is again coiled in one or more turns, and is then led downwards in a straight piece to the steam chamber of the burner, substantially as hereinbefore described. 6th. In oil spray lamps for lighting and heating purposes, wherein a steam generating coil, pipe, or tube, made with straight portions and heated by the flame of the lamp is used, the making of said coil, pipe, or tube in two parts jointed together at the straight portions, so that the top and highly heated part may be taken off and renewed when necessary, substantially as hereinbefore described. 7th. The application and use for the purposes set forth, of a cone having a small oil admission hole in its apex, substantially as hereinbefore described. 8th. The combination, with the cone S having a small oil admission hole in its apex, of a spindle or wire so fitted in the oil supply pipe that said spindle or wire shall be directly in line with, and be free to penetrate, the hole in said cone, so as to clear away any obstruction which may occasionally clog it up, substantially as hereinbefore described. 9th. In oil spray lamps for lighting and heating purposes, the combination, with a steam generating coil, pipe, or tube, heated by the flame issuing from the burner of the lamp, of a tank or reservoir divided into two compartments by a suitable partition or its equivalent, the one for oil and the other for water, the oil being forced up to the burner and the water to the steam generating coil pipe by the action of compressed air, substantially as hereinbefore described.

No. 31,754. Composition (Fluid Albumen) for Wall Plastering, House Roofing, Artificial Marble and Stone, Slate and Floor Tiles or Blocks also for making colours for paint. (*Composition (fluide albumen) servant à faire les enduits des murs et des couvertures de maisons, les imitations de marbres et de pierres de construction, les ardoises, les tuiles ou carreaux d'appartements, ainsi que pour préparer les couleurs pour les peintures.*)

Victor B. C. Vannier, Québec, Qué., 18th July, 1889; 5 years.

Résumé.—Une composition nommée *Fluide d'Albumen* servant à faire les mortiers, les enduits des murs et des couvertures de maison, des imitations de marbres, de pierre de construction, d'ardoises, de carreau d'appartement, ainsi que pour la préparation des couleurs pour la peinture, les diverses applications dans les proportions et pour les fins décrites.

No. 31,755. Combined Whip and Robe Lock and Line Holder. (*Porte-fouet, accroche-robe et accroche-guides combinés.*)

Hudson Martin and Joel R. Palmer, Roanoke, Mo., U.S., 19th July, 1889; 5 years.

Claim.—The combination, with the socket having an opening *a* in its upper part, an adjustable curved plate located interiorly in the upper part of said socket, and having one end moving relative to said opening *a*, corrugated sector-plate E, and pawl F, and a chain permanently secured at one end to the socket, and adapted to be engaged by the end of the spring in the socket, substantially as set forth.

No. 31,756. Wire Coupling. (*Joint de fil de fer.*)

William Bainbridge, Omaha, Neb., U.S., 19th July, 1889; 5 years.

Claim.—1st. The combination in a wire coupling, of a sleeve provided with a central chamber larger at one end than at its opposite end, and having internal walls inclined towards each other, a removable wedge having serrated or corrugated exterior surfaces corresponding approximately to said walls of the sleeve, and wires interposed between the wedge and sleeve, in the manner and for the purpose set forth. 2nd. The combination in a wire coupling, of a sleeve provided with a central chamber larger at one end than at its opposite end, and having straight inner walls inclined toward each other throughout the length of the sleeve, a wedge having an inclined exterior surface corresponding with the inner walls of the sleeve, and wires interposed between the wedge and sleeve, in the manner and for the purpose described.

No. 31,757. Composition of Matter called Firimite Plastering, suitable for all kinds of Plastering, plain and ornamental, for Panelling of Walls, Decorations of Ceilings and Halls Stucco Walls. (*Composition dite "Enduit Firimite," propre à toutes sortes d'enduits, unis et de décor, compartiments de murs, décor des plafonds et des murs en stuc des corridors.*)

George M. Ford, Montréal, Qué., 19th July, 1889; 5 years.

Claim.—A new and useful composition of matter called Firimite plastering, consisting in a mixture of air slaked lime, plaster of paris, river sand, cow hair mixed with serum, purified with carbonic acid, substantially in the proportions and for the purposes set forth.

No. 31,758. Apparatus for Receiving Coin and Automatically delivering a receipt therefor. (*Appareil pour recevoir la monnaie et en donner automatiquement reçu.*)

Isidore E. Clifford, London, Eng., 19th July, 1889; 5 years.

Claim.—1st. The construction of apparatus which I term Automatic Savings Banks, and in which the dropping in of a coin or coins frees mechanism and a receipt, check, or tally, corresponding with and indicating the numerical order in which the deposit is made in the apparatus is delivered to the depositor, substantially as herein described, the said deposits being at predetermined intervals collected and entered to the credit of the depositor's number or numbers, and either prior to or subsequently to the delivery at the office of the receipts, checks, or tallies, as set forth. 2nd. In automatic savings banks, a pivoted shoe or tray into which the coin is received and held until a guard or stop has been removed, which releases the coin and allows it to fall into a receptacle or tube, substantially as described. 3rd. In automatic savings-banks, a pivoted shoe or tray carrying a hooked finger or similar device capable of engaging with a nib or stud on a draw-plate, so as to prevent the withdrawal of said plate unless, a coin be resting on the pivoted shoe or tray, substantially as described. 4th. In automatic savings-banks, a draw-plate having attached to it a guard or stop, as referred to in claim 1, and provided with an opening or slot into which a receipt, check or tally can fall from a column above, and such receipt, check or tally on the withdrawal of the plate will travel with it until released by coming over an opening in a plate beneath, and said draw-plate will at the same time release the coin from the shoe or tray, substantially as described.

No. 31,759. Portfolio. (*Portefeuille.*)

Albert Edwards, Brooklyn, N.Y., U.S., 19th July, 1889; 5 years.

Claim.—1st. In a portfolio, the combination, with a series of bars of approximately key-stone shape in cross section, said bars being flexibly connected and bearing leaves, so that when the latter are in an open position the bars will bind by the beveled sides and the leaves be sustained in a radial position, with respect to the back, substantially as specified. 2nd. A portfolio, composed of a series of leaves, provided with a hinged or flexibly connected back, said back having its sectional parts beveled, so that when the leaves are opened the beveled sides of the back sections will abut against each other, substantially as specified. 3rd. In a portfolio, the combination, with a series of leaves, of a flexibly-connected sectional back, said back being composed of bars of key-stone shape in cross section, an upright having a pocket, and a folding top adapted to enter said pocket, substantially as specified. 4th. In a portfolio, the combination, with a suitable case or supporting frame, of a series of leaves having a flexibly connected back composed of bars, which are adapted when the leaves are open to assume the position of an arch, substantially as specified. 5th. In a portfolio, the combination, with a suitable support, of a series of leaves having a flexibly connected back, composed of bars, which are adapted, when the leaves are open, to assume the position of an arch, and a vertically movable upright to prevent the back from sagging, substantially as specified. 6th. A supported portfolio, having a flexible back, leaves connected with the flexible back, and a stand for support, said flexible back being adapted by the binding together of the sides of the pieces of which it is composed to hold the leaves of the portfolio in position, radiating from the flexible back as a centre when the portfolio is open, said stand and its connections with the portfolio being adapted to allow the portfolio to be opened and closed without detachment from the stand, substantially as set forth. 7th. In a supported portfolio, the combination of beveled pieces C, C, C, flexibly connected with each other at the upper points of their beveled sides, and adapted when the portfolio is open to bind together by the contact with each other of their beveled sides, as described, uprights B₂, B₂, B₂, with leaves joined to the pieces C, C, C, together with a stand for support connected with the portfolio by a slide and stop attachment, all substantially as set forth. 8th. In a supported portfolio, the combination, with the case A₃, of beveled pieces C, C, C, flexibly connected with each other at the upper points of their beveled sides, and adapted when the portfolio is open to bind together, as described, uprights B₂, B₂, B₂, with leaves joined to the pieces C, C, C, a bar K, having a stop S₁, a plate P having cut thereon a slide S and being attached to a bar F, together with legs N, N, pivoted upon the uprights B, B, at the points E, E, and pivoted on the cross bar F at the points E₁, E₁, all substantially as described. 9th. In a supported portfolio, the combination of a flexible back and uprights B₂, B₂ connected therewith, said flexible back and uprights B₂, B₂, B₂ in positions radiating from the flexible back as a centre, by the binding together of the sides of the pieces comprising the flexible back, said pieces being in a horizontal line when the portfolio is closed, and assuming a semicircular form when the portfolio is open, together with a stand for support connected with the flexible back by a sliding stop attachment, all substantially as set forth. 10th. In a supported portfolio, substantially as described, the combination of lids L, L, adapted to be dropped into a receiving slot R, cut in the central one of the uprights B₂, B₂, B₂, attached to a flexible back, substantially as specified. 11th. In a supported portfolio, the combination, with a supporting stand having a plate and cross-bar, substantially as described, of a slide and stop, substantially as and for the purposes set forth. 12th. A portfolio, composed of a case, a flexible back attached thereto, and hinged leaves connected with the flexible back, said flexible back consisting of a series of key-stone shaped pieces flexibly connected with each other at the upper points of their beveled sides or edges, in contact with each other at the upper points of their beveled sides or edges, when the portfolio is closed, and capable of binding together by the contact of their beveled sides or edges with each other when the portfolio is open, said hinged lever consisting of upright pieces and connections working in unison with the series of key-stone shaped pieces, all substantially as described. 13th. In a portfolio, a hinge, consisting of a series of key-stone shaped pieces flexibly connected

with each other at the upper points of their beveled sides or edges, in contact with each other at said upper points, and their beveled sides or edges when the portfolio is closed, and capable of binding together by the contact of their beveled sides or edges when the portfolio is open, substantially as set forth. 14th. In a portfolio, the combination of a case, a series of key-stone shaped pieces flexibly connected with each other at the upper points of their beveled sides or edges, joined to said case, said key-stone shaped pieces being in contact with each other at the upper points of their beveled sides or edges when the portfolio is closed, and capable of binding together by the contact of their beveled sides or edges when the portfolio is open with hinged leaves composed of upright pieces and connections working in unison with the key-stone shaped pieces, substantially as set forth. 15th. In a portfolio, the combination of a case A₃, a flexible back connected therewith, consisting of a series of keystone shaped pieces flexibly connected with each other at the upper points of their beveled sides or edges, and working upon each other, as described, with upright pieces B₂, B₂, B₂, and connections working in unison with the key-stone shaped pieces, all substantially as set forth. 16th. In a portfolio, substantially as described, the combination of a series of key-stone shaped pieces, flexibly connected with each other at the upper points of their beveled sides or edges, and working upon each other, as described, substantially as and for the purposes set forth. 17th. In a portfolio, the combination of a case A₃, with pieces B₂, B₂, B₂ of wood, or suitable material attached thereto, said pieces B₂, B₂, B₂ having their sides or edges beveled in the form of key-stone, and being flexibly held together by a fastening e, e, of canvas, leather, tape, cord, or suitable material upon their upper faces, with upright pieces B₃, b₁, b₁, b₁, and connections C, C, C, attached to the beveled pieces B₂, B₂, B₂, at or near the respective ends of said beveled pieces and upon the upper faces thereof, all substantially as specified. 18th. In a portfolio, substantially as described, the combination of pieces B₂, B₂, B₂ of wood, or other suitable material, having their sides or edges beveled in the form of keystones, and being flexibly held together at the upper points of their beveled sides or edges, and working upon each other, as described, substantially as and for the purposes set forth.

No. 31,760. Roundabout. (*Jeu de bague.*)

Thomas C. Lidster, Hull, Eng., 19th July, 1889; 5 years.

Claim.—1st. In a roundabout, the employment in connection therewith of the vertical shaft B having a spherical termination C at its lower end, supported by the divided cup D, the upper portion thereof of reclining within the slot s of the shell H, whereupon, on power being transmitted to the apparatus through the geared wheel G, an undulatory or wave-like motion is imparted to the disc A carrying the bars or beams L for supporting the boats or other vehicles, substantially as herein set forth. 2nd. In the improved roundabout herein referred to, the employment of an inner tube or shell E, which serves to vary the degree of undulatory motion by the raising or lowering thereof the upper circular edge, of which latter forms a bearing or path for the travel of the disc A, substantially as set forth.

No. 31,761. Dress Cutter's Rule.

(*Règle de couturière.*)

Theresa I. Stockman, Council Bluffs, Iowa, U. S., 19th July, 1889; 5 years.

Claim.—A dress-cutter's rule, having one side edge convex and the other concave, the curves of the said edges being partially elliptical, the ends being straight-edged and narrower than the midway portion, the convex edge being provided with a scale of graduations, numbered from 11 to 19, and bearing the described proportional ratio to the whole length of the rule, substantially as shown and described, whereby the concave curve of the rule may be located as a guide to draw an arm's-eye on a dress, as set forth.

No. 31,762. Electric Motor and Dynamo Electric Machine. (*Moteur électrique et machine dynamo-électrique.*)

Orazio Lugo, New York, N.Y., U.S., 19th July, 1889; 5 years.

Claim.—1st. In an electric motor or dynamo machine, a series of stationary electro-magnets, a series of revolving electro-magnets, one having an uneven number and the other an even number, the two series being arranged concentrically and parallel with each other, a stationary commutator, to the segments of which the coils of the fixed series are connected at one end, a common or multiple arc connection for the other ends of the coils of said series, a revolving brush for said commutator, a revolving commutator, to the segments of which the coils of the revolving series are connected at one end, a common connection for the other ends of the coils of said revolving series, and a stationary brush for said revolving commutator, whereby the current is directed through the coils of one stationary and one revolving electro-magnet, and the said electro-magnets form a closed magnetic circuit, this action taking place in proper sequence, so that each stationary electro-magnet makes a close magnetic circuit with each revolving electro-magnet once during each revolution.

No. 31,763. Implement for Separating Checks, Tickets, Stock Certificates, etc., from their Stubs.

(*Outil pour séparer les chèques, billets, certificats de rentes, etc., de leurs souches.*)

Alfred H. Cridge, New York, N.Y., U.S., 19th July, 1889; 5 years.

Claim.—1st. A detacher or tearing implement, having an irregularly serrated edge. 2nd. A detacher or tearing implement, having a surrounding serrated edge, the teeth or projections forming said edge varying in form. 3rd. A detacher or tearing implement, having a concave under surface and a serrated edge. 4th. A detacher or tearing implement, having a concave under surface and an irregularly serrated edge.

No. 31,764. Mallet. (Maillet.)

Nathaniel B. Runnals, Pittsfield, Me., U.S., 19th July, 1889; 5 years.

Claim.—A metallic mallet, having recessed ends and cushions fitted therein, and retained by an enlargement of the bottom of said recesses, said cushions provided with superficial flanges extending beyond the periphery of the ends of the mallet, substantially as and for the purposes herein described.

No. 31,765. Burner. (Brûleur.)

Robert B. Carsley, New Bedford, Mass., U. S., 19th July, 1889; 5 years.

Claim.—1st. In a burner, the combination, with an inner and outer foraminous tube, of a base to support said tubes, and composed of an outer shell, provided with openings for the admission of gas and air, an inner shell surrounding the said air opening and forming with the outer shell a gas chamber, and a cap for said chamber having gas outlets to admit gas between the said tubes, substantially as described. 2nd. In a burner, the combination, with an inner and outer foraminous tube, of a muffle covering said tubes, and a base provided with a gas outlet to admit gas between the said tubes, and an air passage to admit air to the inner tube, the products of combustion being caused by the said muffle to pass through the sides of the outer tube, substantially as and for the purpose specified. 3rd. In a burner, the combination, with an inner and outer foraminous tube, of a muffle covering said tubes, and a base, composed of an outer shell, provided with openings for the admission of gas and air, an inner shell surrounding the said air-opening and forming with the outer shell a gas-chamber and a cap for said gas chamber, having gas outlets to admit gas between the said tubes, substantially as described. 4th. In a burner, the combination, with an inner and outer foraminous tube, of a muffle covering said tubes, and a base composed of an outer shell, provided with openings for the admission of gas and air, an inner shell surrounding the said air-opening, and forming with the outer shell a gas chamber, and a cap for said gas chamber, having gas outlets to admit gas between the said tubes and with a damper to regulate the supply of air to the burner, substantially as described.

No. 31,766. Mode of and Apparatus for Obtaining Motive Force for use in Fluid Pressure Engines. (Mode et appareil de production de la force motrice à l'usage des machines à pression de fluide.)

John Bourne, London, Eng., 19th July, 1889; 5 years.

Claim.—1st. The obtaining of motive force for use in motive power engines, by burning hydro-carbon liquid, or vapour, and air under pressure, and mixing with the products of combustion, steam, or highly heated water on their passage to the engine, as above described. 2nd. The use of a combustion chamber fitted to burn hydro-carbon liquid, or vapour, and air under pressure, and the same time to generate steam, or to heat water for the supply of steam to the gases of combustion, as and for the purpose above set forth.

No. 31,767. Treating Ores and Metallurgical Products. (Traitement des minerais et produits métallurgiques.)

Edward H. Russell, Park, Utah, U.S., 19th July, 1889; 5 years.

Claim.—1st. As an improvement in the art of extracting metals from ores and metallurgical products by means of a leaching solution, the method of preparing the ore for the use of the solution which consists in placing in the path of the solution through the ore or product, a compound or salt of copper, substantially as and for the purpose described. 2nd. As an improvement in the art of extracting metals from ores and metallurgical products, the method of preparing the mass of ore or product for the leaching solution which consists in mixing with such ore or product a salt or compound of copper, substantially as and for the purpose described. 3rd. The process of extracting metals from ores and metallurgical products, which consists in placing a salt or compound of copper so that it will be passed through by the leaching solution, and then treating the mass with a hyposulphite leaching solution, substantially as and for the purpose described. 4th. The process of extracting metals from ores and metallurgical products which consists in mixing with the ore or product sulphate of copper and then treating the mass with a hyposulphite solution, substantially as and for the purpose described.

No. 31,768. Means for Obtainin Water Power. (Moyens de produire la force hydraulique.)

Daniel B. Long, Buffalo, (assignee of David N. Long, Williamville), N.Y., U.S., 19th July, 1889; 5 years.

Claim.—The herein described mode of obtaining water power along a river above the river falls, consisting in combining therewith an auxiliary canal located along the river above the river falls having its bed below the bed of the main stream or river and having its head or upper end closed, and the foot or lower end opened, some point near the surface of the river below the river falls, in combination with a series of cross cuts from said upper river to the canal, and a means located at suitable points for receiving and transmitting the power, substantially as described.

No. 31,769. Draw Bridge Gate. (Barrière de pont-levés.)

Almy LeG. Peirce, Grand Rapids, Mich., and Moses M. Hobart, Cleveland, Ohio, U.S., 19th July, 1889; 5 years.

Claim.—1st. The combination, with the pier or abutment of the latch post, the latches pivotally supported thereon, the slotted uprights, the folding gate pivotally secured to said pier or abutment

and a swinging draw span or bridge provided with posts at its corners for lifting said latches when the gate is to be opened, substantially as described. 2nd. The combination of a pier or abutment with a folding gate provided with vertical pivoted end bars C₁, top rail C₁₁, and friction blocks E secured to and projecting from said end bars, and a draw span or bridge A, provided with arms and rollers which are supported upon the corners thereof, for engaging with said friction blocks and opening and closing said gate, substantially as described. 3rd. The combination of a pier or abutment with a folding gate provided with vertical pivoted end bars C₁, top rail C₁₁, friction blocks E secured to and projecting from said end bars, and provided on their inner faces with inclined friction plates f, and on their outer faces with adjustable friction plates e, and a draw span or bridge A, provided with arms and friction rollers which are supported upon its corners, and arranged to engage with said friction blocks and plates and to thus open and close said gate, substantially as described. 4th. The combination of a pier or abutment, a folding gate consisting of vertical bars and intermediate bars which are pivoted at their upper and lower ends, a horizontal plate and top rail having notches near its ends with pivoted latches, and a swinging draw span or bridge provided with vertical posts at its corners having rounded upper ends, substantially as and for the purpose described. 5th. A folding gate for draw bridges comprising a horizontal stationary bottom plate, a movable top rail, and vertical bars pivoted at their ends to said bottom plate and top rail, in combination with latches for holding said gate in raised position and devices for raising and lowering the same, substantially as described.

No. 31,770. Method of Regulating Current or Potential in Secondary of Transformers. (Manière de régler le courant ou potentiel des piles secondaires.)

The Thomson-Houston International Electric Company, Boston, (assignee of Elihu Thomson, Lynn), Mass., U.S., 20th July, 1889; 5 years.

Claim.—1st. The herein-described method of adjusting, regulating, or determining the current or potential in the secondary of two coils or circuits placed in inductive relation, consisting in developing alternating magnetism through the action of the current in each or either of said circuits in a suitable iron core, and variably closing the magnetic circuit of said core through a path independent in whole or in part of the core, or portion of core, in which magnetism is developed by the other coil or circuit. 2nd. The herein-described method of obtaining a fall of potential in the secondary circuit of an induction coil fed from a constant potential source, consisting in magnetizing a core by one of said circuits, and partially closing the magnetic circuit of said core through a path of determinate or set value independent of the core or portion of core which is excited by the other circuit. 3rd. The herein-described method of regulating the current in the secondary circuit of a transformer, which consists in developing a magnetism by current in each or either circuit of the transformer, and variably closing the magnetic circuit through a path independent of the core or portion of core carrying the coil or the other circuit of the transformer. 4th. The herein-described method of obtaining a substantially constant current in the variable-resistance circuit of a transformer fed from a constant potential source, consisting in shunting the magnetism threading the two coils of the transformer in variable amount, as and for the purpose described. 5th. The herein-described method of obtaining a constant current in a variable-resistance circuit from a constant potential source, consisting in passing the current from said source through the primary of an induction-coil whose secondary is connected to the variable-resistance circuit, setting up rapid alternations of magnetism in a suitable core by current in each or either of said circuits, and causing a variable closure of the magnetic circuit for said core through a partial magnetic circuit which is independent of the core for the other. 6th. The herein-described method of regulating the current in the secondary circuit of an alternating transformer, consisting in setting up alternations of magnetism by the current in each or either of the coils of said transformer, partially closing the magnetic circuit, and adjusting a conducting plate or body transversely in a gap of such circuit to vary the closure. 7th. The herein-described method of regulating the current in the secondary of an induction-coil, consisting in disposing the primary or secondary on different parts of an endless iron core, and magnetically shunting the magnetism of the iron core in increased amount with an increase of current in the secondary.

No. 31,771. Induction Coil and Self-Inductive Apparatus. (Bobine d'induction et appareil inductif automatique.)

The Thomson-Houston International Electric Company, Boston, (assignee of Elihu Thomson, Lynn), Mass., U.S., 20th July, 1889; 5 years.

Claim.—1st. In an electro-magnet having a closed magnetic circuit threading its coils, a laminated core-piece having a notch or gap for application of the coils, closed by a driven laminated plug or stopper whose laminations are parallel to and in magnetic connection with those of the body of the core and form a butt joint with the same, as and for the purpose described. 2nd. A horseshoe electro-magnet having coils placed upon the legs of the horseshoe, and a core-piece for said magnet made up of a bundle or pile of plates of general U-form, in combination with a laminated plug or stopper, driven, or forced, into the gap between the legs of the horseshoe, with its laminations parallel to and in direct magnetic contact with those of the core to form a closure of the magnetic circuit threading the coils, as and for the purpose described. 3rd. The combination, with the laminated magnet-core having a gap or notch, of a closing-piece for the magnetic circuit consisting of a tapered laminated plug or stopper, forced, or driven, tightly into the gap or notch, with its laminae parallel to and forming magnetic contact with the ends of the laminae for the core by butt-joints. 4th. In an induction or self-inductive coil, a magnetic circuit threading the coil or coils and composed of a number of discontinuous plates or laminae of iron piled up together and insulated fatwise, in combination with a magnetic circuit-closing

plug or block composed of iron laminae of a width adapted to fit tightly into the gap in the continuity of the first-named plates, and driven or forced tightly into place in the socket formed by the gap, the laminations of both sets of plates being in substantially the same plane. 5th. An induction or self-inductive coil constructed of a laminated core in U-shape coils slipped over the limbs of the laminated core, and a magnetic circuit-closing plug, or stopper, driven, or forced, into the socket formed by the notch, or opening, between the legs of the core, as and for the purpose described. 6th. An electromagnet having an endless core formed in two parts, one of which is the greater portion of said core, while the other consists of a plug, or stopper, driven into place in an opening, or gap between the ends of the larger piece, said plug and gap being accurately fitted to one another, so that the plug when driven in place will be tightly held, and will form a complete closure of the endless magnetic circuit for the core.

No. 31,772. Refrigerator. (*Garde-manger.*)

Josef Swetitsch and John H Raap, Chicago, Ill., U.S., 20th July, 1889; 5 years.

Claim.—1st. In a refrigerator, the combination, of an inclosure and a series of plates F supported in oblique position with reference to the wall, one above the other, adjacent to the wall surface and out of contact with the same along their lower edges, and each plate extending at its upper edge to or beyond the lower edge of the plate above it, the plates affording with their support and the wall-surface, upwardly flaring compartments G to contain ice H, and intercommunicating vertically along the wall, thereby permitting the ice to be supplied to all the said compartments through the uppermost compartments, substantially as described. 2nd. In a refrigerator, the combination, of an inclosure and a series of plates F removably supported in oblique position with reference to the wall, one above the other, adjacent to the wall-surface and out of contact with the same along their lower edges, and each plate extending at its upper edge to or beyond the lower edge of the plate above it, the plates affording with their support and the wall-surface, upwardly flaring compartments G to contain ice H, and intercommunicating vertically along the wall, thereby permitting the ice to be supplied to all the said compartments through the uppermost compartment, substantially as described.

No. 31,773. Machine for Cold Rolling Wire. (*Machine à laminer le fil de fer à froid.*)

Henry A. Williams, Taunton, Mass., U.S., 22nd July, 1889; 5 years.

Claim.—1st. The combination of a series of pairs of rolls arranged in different angles about a common axis, and being adjustable circumferentially thereto, and a guideway in said axis for conducting the wire from one pair to another of said rolls, substantially as described. 2nd. The combination, of a series of pairs of rolls arranged in different angles about a common axis, and being adjustable circumferentially thereto, and a guideway in said axis consisting of guide tubes, substantially as described. 3rd. The combination of a series of pairs of rolls arranged in different angles and about a common axis, and being adjustable circumferentially thereto, and a guideway in said axis consisting of guide tubes which are also the pivot supports of the roller beds, said tubes being supported in the main frame, substantially as described. 4th. In a wire rolling mill, a series of pairs of rolls arranged in a continuous train, and successively geared with a common driver, so that each pair shall have a greater speed of rotation than the one that precedes it, and each pair separately geared to said driver with an intervening friction clutch adapted to shift and graduate the speed of the rolls to the speed of the wire, substantially as described. 5th. The combination of a series of pairs of wire reducing rolls arranged in different angles about a common axis of a driving wheel *u*, geared with each pair and mounted on a sleeve concentric with said axis and also geared with pinions on the common driving shaft, substantially as described. 6th. The roller bed frames pivoted on the guide tubes supported in the main frame, and having a trunnion sleeve *z* forming the bearing of the driving wheel *u*, substantially as described. 7th. In a wire rolling mill having a series of pairs of rolls adjustably arranged in different angles about a common axis, the roll bed frames pivoted in said axis and having a clamping flange *h*, in combination with a slotted clamping face plate *i* of the main frame, and a clamping bolt *g*, substantially as described.

No. 31,774. Conduit for Electric Railway.

(*Conduit pour les chemins de fer électriques.*)

Samuel Trott, Halifax, N.S., 22nd July, 1889; 5 years.

Claim.—1st. A conduit for electric railways, having a metallic base which supports upright insulators carrying conductors, the insulators being mounted directly on the base of the conduit by means of upright pins, the insulators being also concaved at the bottom, and each having a groove in its top to hold a conductor, substantially as described. 2nd. A conduit for electric railways, having a metallic base, in combination with a pair of conductors mounted upon upright insulators, which are supported directly on the base of the conduit by means of upright pins to which they are screwed, the said insulators being bell insulators, and grooved at the top to hold the conductors. 3rd. A metallic conduit for electric railways, upright pins screwed into the base thereof, jam-nuts for securing the pins, and bell insulators secured to the outer end of the pins, substantially as described. 4th. The combination, with an insulator, having a wedge-shaped groove, of an L-shaped conductor, each arm of the L being wedge-shaped, and a ledge or key for locking the conductor and insulator together.

No. 31,775. Sash Weight.

(*Contre-poids de croisée.*)

Archibald M. Culloch, Pittsfield, Mass., U. S., 22nd July, 1889; 5 years.

Claim.—1st. The combination, with a sash-weight, provided with a shoulder D near its upper end, of the link affixed to the lower end

of a sash chain, or cord, and provided with jaws or half collars embracing the weight below the shoulder, substantially as specified. 2nd. The combination, with a sash-weight, provided with a shoulder D, of the link, consisting of a spring wire loop, connected at its closed end to the sash, cord, or chain, and provided at its free ends with integral bert jaws or half-collar at right angles to the loop to inclose the weight below the said shoulder, substantially as specified.

No. 31,776. Process of Reducing Iron Ores.

(*Procédé de réduction des minerais de fer.*)

Gustaf M. Westman, New York, N.Y., U.S., 22nd July, 1889; 5 years.

Claim.—1st. The herein described process for reducing iron ores by means of carbonic oxide, which consists in passing heated carbonic oxide through a charge of iron ore, drawing off the gases from the charge and passing them over glowing coke, then superheating these gases, after which they are again passed over or through the ore to be reduced, substantially as shown and described. 2nd. The herein described process for reducing iron ores by means of carbonic oxide, which consists in passing heated carbonic oxide through a charge of iron ore, drawing off the gases from the charge, and passing them over glowing coke, cooling the gases, as described, then superheating these gases, after which they are again passed over or through the ore to be reduced, substantially as shown and described.

No. 31,777. Machine for Warming, Scalding and Refrigerating Milk and other Dairy Produce, Beer and Liquids of any other Name or Description Whatsoever. (*Machine pour réchauffer, échauder et rafraichir le lait et autres produits de la laiterie, la bière et les liquides de toutes sortes.*)

Lawrence Watson, Middlesbro-on-Tees, Eng., 22nd July, 1889; 5 years.

Claim.—In combination with a helix of metal, in one or more parts, as referred to, an upper vessel for receiving and distributing milk or other dairy produce, or liquid, or liquids, to be heated or cooled, and a vessel or dish for receiving the same after treatment, substantially as described.

No. 31,778. Celluloid Dress Stay.

(*Busc de corset en cellulose.*)

Charles D. Mackay, Toronto, Ont., 22nd July, 1889; 5 years.

Claim.—1st. A dress stay, formed of a bed plate B, of celluloid or other analogous material, in combination with a flexible blade F, substantially as and for the purpose set forth. 2nd. A dress stay formed of a bed plate B of celluloid or other analogous material, in combination with a flexible blade F and cover C, substantially as and for the purpose set forth. 3rd. A dress stay, formed of a bed plate B of celluloid or other analogous material, in combination with a flexible blade F interposed between layers of rubber tissue E, and the latter interposed between the bed plate B and a cover C, substantially as and for the purpose set forth.

No. 31,779. Fyle for Papers. (*Serre-papier.*)

Adolphe Lepage, St. Henri, Que., 22nd July, 1889; 5 years.

Claim.—1st. In a fyle F₁ for papers, the combination of the board A provided with the bases K and N, in movable tubes L, L and O, separated by the aperture P, projections Q, Q and M, also screw P with the board B provided with the clamp C having the openings E, F, G and H, screw D and eccentric J, substantially as described and for the purposes set forth. 2nd. With a fyle F₁ for papers, a binder B₁ made by the combination of the board R, with the base S, tubes I, I and transfer V, substantially as described and for the purposes set forth. 3rd. With a fyle F₁ for papers, a punch P₁ made by the combination of the base W, provided with the holes d, with the piece X, cam Y, spring plate b, punches c, c, and springs e, e, substantially as described and for the purposes set forth. 4th. The combination of the fyle F₁, with the binder B₁ and P₁, substantially as described and for the purposes set forth.

No. 31,780. Folding Chair and Life Buoy Combined. (*Chaise pliante et bouée de sauvetage combinées.*)

Charles J. Shirreff, Brockville, Ont., 22nd July, 1889; 5 years.

Claim.—1st. A combined folding chair and life buoy, consisting of the legs B, B, integral with the back standards D, D, said standards connected by the back rail or rails E, and provided with a longitudinal groove F, the seat C having a pin or projection entering said groove, the legs A, A pivoted to the seat and to the legs B, B at their intersection, and the metallic air-tight case G encased by the seat, as set forth. 2nd. The hollow metallic air-tight case G, encased by the seat C of a folding chair, substantially as set forth.

No. 31,781. Means for Purifying Water.

(*Moyens pour purifier l'eau.*)

John Davis, Allegheny, Penn., U.S., 22nd July, 1889; 5 years.

Claim.—1st. A water purifier, consisting of a chemical chamber, a coagulating and precipitating chamber, a supply pipe communicating with both of said chambers, a filter bed and a chamber for purified water under said bed, and all within one and the same vessel, in combination with a discharge pipe. 2nd. A water purifier, consisting of an elongated body, having a combined receiving and precipitating chamber, a separate filter chamber above the receiving chamber, and a filtered liquid chamber between the filter and receiving chambers, in combination with a supply-pipe, a pipe for conducting liquid from the receiving chamber into the filter chamber, at one end

thereof, and a pipe for drawing filtered from the liquid chamber at the opposite end of the purifier. 3rd. A water purifier, having a receiving and precipitating chamber, in combination with a supply pipe provided with a flattened and laterally distended nozzle to discharge liquid in a thin horizontal sheet at the top of said chamber, a filter chamber and suitable pipes for conducting liquid to and from the filter chamber. 4th. A water purifier, provided with a receiving and precipitating chamber, in combination with a horizontal supply pipe and a similar discharge pipe, each having a flat nozzle, a transverse vertical bar between the nozzles and a filter chamber. 5th. A water purifier, having a horizontally elongated body, and provided with a receiving and precipitating chamber, a chemical chamber crossing one end of the receiving chamber, a horizontal supply pipe communicating with the chemical chamber and the receiving chamber, and terminating in a flattened and laterally distended nozzle, in combination with a filter chamber and a purified water chamber below the filter chamber. 6th. A bottom for a water purifier, composed of sheet metal having right-angled corrugations perforated, as described, a covering of wire and a filling of coarse filtering material, or its described equivalent, for the purpose set forth. 7th. A water purifying vessel, consisting of a horizontal elongated body, having its ends curved transversely, its sides curved vertically, and its top curved transversely from side to side, whereby each wall braces the walls adjacent thereto, without the intervention of stay-rods. 8th. In a water purifier, an agitator, consisting of a shaft, and a series of blades projecting therefrom in the same vertical plane, and at an oblique angle to the horizon, whereby the filter-bed is raised in columns and passages formed for the liquid supplied from beneath the bed to cleanse it. 9th. The combination of a motor operated by water from a supply conduit, an air compressor and suitable pipes for conducting air from the compressor into the water flowing into the motor, in combination with a supply main communicating with the motor and one or more water purifiers. 10th. The combination of a water motor, an air compressor operated by said motor, and discharging compressed air into the water, a supply-main and one or more water purifiers, supplied with water which has propelled the motor. 11th. The combination of a motor, a series or system of water purifiers, provided with agitators, suitable operating mechanism connecting the motor and agitators of all the filters and shipping devices, whereby all of the filter beds may be agitated simultaneously or one or more agitated separately. 12th. In a water purifier, the combination of an air supplying device, a chemical supplying device, a precipitating and sediment collecting chamber, a filter bed and suitable distributing mains, substantially as described.

No. 31,782. Paper File. (*Serre-papier.*)

Joseph A. Fournier, Ottawa, Ont., 22nd July, 1889; 5 years.

Claim.—1st. A file, consisting of the curved bar A, having foot *a*, with slot *a*¹, and head *a*, with cavity *a*¹¹, and a pin B pivoted in the cavity of said head and extending its point into the slot in the foot, substantially as set forth.

No. 31,783. Roller Mandrel.

(*Mandrin à rouleaux.*)

Stephen P. M. Tasker, Philadelphia, Penn., U.S., 22nd July, 1889; 5 years.

Claim.—1st. A mandrel head containing two or more positively driven-rolls, substantially as and for the purposes set forth. 2nd. In combination, a mandrel head containing two or more rolls, and driving mechanism, essentially such as set forth, for positively driving said rolls, substantially as and for the purposes set forth. 3rd. In a roller mandrel, substantially such as set forth, the combination of two or more mandrel rolls, gearing for positively driving said rolls, and a prime mover for actuating said gearing. 4th. In a mandrel for rolling tubes, the combination, of a mandrel rod, rolls mounted rotatively therein, a prime mover mounted in connection with said mandrel rod, and gearing operatively uniting said prime mover and rolls, substantially as set forth. 5th. In a mandrel for rolling tubes, the combination of mandrel rolls mounted rotatively therein, teeth identified with said rolls, propulsive gearing engaging with said teeth, and means for applying power to said propulsive gearing. 6th. The combination to form a mandrel for rolling tubes, of two or more rolls provided with teeth, a mandrel head for carrying said rolls, and a rack which is engaged, with the teeth of said rolls, substantially as and for the purposes set forth. 7th. The combination to form a mandrel for rolling tubes, of two or more rolls provided with teeth, a mandrel head for carrying said rolls, a rack which is engaged with the teeth of said rolls, and means for imparting longitudinal thrust to said rack, substantially as and for the purposes set forth. 8th. The combination to form a mandrel for rolling tubes, of two or more rolls provided with teeth, a mandrel head for carrying said rolls, and a rack which passes between or among the rolls, and is engaged with the teeth of said rolls, substantially as and for the purposes set forth. 9th. The combination to form a mandrel for rolling tubes, of two or more rolls provided with teeth, a mandrel head for carrying said rolls, a rack which passes between or among the rolls and is engaged with the teeth of said rolls, and means for imparting longitudinal thrust to said rack, substantially as and for the purposes set forth. 10th. The combination, in a roller mandrel, of two ellipsoidal rolls, the axis of which are inclined to each other and which are provided with teeth, a mandrel head carrying said rolls, and a rack which is engaged with the teeth of said rolls, substantially as and for the purposes set forth. 11th. The combination, in a roller mandrel, of two ellipsoidal rolls, the axis of which are inclined to each other and which are provided with teeth, a mandrel head carrying said rolls, a rack which is engaged with the teeth of said rolls, and means for imparting longitudinal thrust to said rack, substantially as and for the purposes set forth. 12th. The combination, in a roller mandrel, of two ellipsoidal rolls, the axis of which are inclined to each other, and which are provided with sunken teeth circumscribing their central portions, a mandrel head carrying said rolls, and a spiral rack which passes between said rolls and is engaged with the sunken teeth thereof, substantially as and for the purposes set forth. 13th. The com-

bination, in a roller mandrel of two ellipsoidal rolls, the axis of which are inclined to each other, and which are provided with sunken teeth circumscribing their central portions, a mandrel head carrying said rolls, a spiral rack which passes between said rolls and is engaged with the sunken teeth thereof, and means for imparting longitudinal thrust to said rack, substantially as and for the purposes set forth.

No. 31,784. Pencil Sharpener. (*Taille-crayon.*)

John B. Bartlett, Jersey, N.J., U.S., 22nd July, 1889; 5 years.

Claim.—1st. A pencil sharpener consisting of side plates provided with inwardly extending cutting tongues, and a frame interposed between the side plates, substantially as described. 2nd. In combination with a central frame, a plate on each side thereof, and a cutting tongue formed in one piece with each side plate, substantially as described. 3rd. In combination with a central frame, a spring plate on each side thereof, provided with a cutting tongue, the frame having a bifurcated end, and the plates having flared ends, substantially as described. 4th. In combination with the central frame, a spring plate on each side thereof having cutting tongues, and a spring tongue arranged below the cutting tongue and adapted to bear on the pencil point, substantially as described. 5th. In combination, a central bifurcated frame and a spring plate on each side thereof, each spring plate provided with a cutting tongue, and a bearing tongue made integral therewith, substantially as described. 6th. In combination, a central frame and a spring plate on each side thereof, having inwardly extending cutting tongues, said plates being movably connected to the frame, whereby they may be swung to one side to allow for the sharpening of the tongue, substantially as described. 7th. In combination with the central frame, and the spring plates having cutters for the wood, of the pencil serrations on the edge of the frame, substantially as described.

No. 31,785. Expansible Mandrel.

(*Mandrin à compensation.*)

Patrik H. Griffin, Buffalo, N.Y., U.S., 22nd July, 1889; 5 years.

Claim.—1st. In expansible mandrels, the combination, with a tapering arbor A provided with an internally screw-threaded central aperture, and with parallel dovetail longitudinal grooves at the periphery of the wedge-shaped jaws D, having parallel toes *g* at their heads, and the spindle B having the head C, and circular nut *e*, the whole being constructed to operate substantially as and for the purpose stated. 2nd. In expansible mandrels, the combination, with a tapering arbor having dovetailed longitudinal grooves at its periphery, or taper jaws having toes at their heads, a revolving screw-threaded spindle engaging said arbor provided with a head having a circular base, and a removable nut on said spindle, said toes engaging the neck *f* in said spindle, substantially as and for the object stated.

No. 31,786. Gas Meter. (*Compteur au gaz.*)

J hn Hearne, New York, N.Y., U.S., 22nd July, 1889; 5 years.

Claim.—1st. In a meter, the combination, with a slide-valve, of a guard for preventing the permanent displacement of the valve, said guard being near to but normally out of contact with the said valve, substantially as specified. 2nd. In a meter, the combination, with a slide valve and a soft-metal guide therefor, of a guard to prevent the permanent displacement of the valve, the said guard being near to and normally out of contact with the valve, substantially as set forth.

No. 31,787. Time Recorder. (*Régistre horaire.*)

Alexander Dey, Glasgow, Scotland, 22nd July, 1889; 5 years.

Claim.—1st. The combination, with the clock mechanism, and minute hand spindle, of a time-printing type-wheel arranged rotary with said spindle, recording type-wheels arranged concentric with the time printing type-wheel, and rotary independently thereof, indicators on the recording type-wheels, a plunger movable at will of the operator, a platen connected to the plunger and facing the respective type-wheels, and an impression-receiving band passing between the type-wheels and platen, as set forth. 2nd. The combination, with the clock mechanism, and minute-hand spindle, of a time-printing type-wheel arranged rotary with said spindle, recording type-wheels arranged concentric with the time printing type-wheel, and rotary independently thereof, indicators on the recording type-wheels, a detent actuated by the plunger and adapted to engage the recording type-wheel, a platen carried on the plunger and facing the respective type-wheels, and an impression receiving band passing between the type-wheels and platen, substantially as set forth. 3rd. The combination, with the clock mechanism and minute-hand spindle, of a time printing type-wheel arranged rotary with said spindle, recording type-wheels arranged concentric with the time printing type-wheel, and rotary independently thereof, indicators on the recording type-wheels, segmental racks having V-shaped notches and rigidly attached to and concentric with the latter type-wheels, a plunger movable at will of the operator, a V-shaped detent actuated by the plunger and adapted to engage the notches of the aforesaid racks, a platen carried on the plunger and facing the respective type-wheels, and an impression receiving band passing between the type-wheels and platen, substantially as set forth and shown. 4th. In combination, with the clock-mechanism and minute-hand spindle, a wheel mounted loosely on said spindle and provided with V-shaped notches in its periphery, a spring connecting said wheel to the spindle, a type-wheel fixed to the hub of the aforesaid wheel, a V-shaped detent adapted to engage the notched wheel, a plunger movable at will of the operator and actuating the detent, a platen carried on the plunger and facing the type-wheel, and an impression receiving band passing between the type-wheel and platen, substantially as described and shown. 5th. In combination with the clock-mechanism and minute-hand spindle, a driving wheel independent of the clock-mechanism, an hour-wheel receiving motion from said driving wheel, and an escapement mechanism receiving motion from the minute-hand spindle, and controlling the movement of the said hour-wheel,

as set forth. 6th. In combination with the clock-mechanism and minute-hand spindle, a driving wheel independent of the clock-mechanism, an hour-wheel receiving motion from said driving wheel, an escapement mechanism receiving motion from the minute-hand spindle and controlling the movement of the hour-wheel, a type-wheel fastened to the side of the hour-wheel, a platen movable toward and from the said type-wheel, and an impression receiving band passing between said platen and type-wheel, substantially as described and shown. 7th. In combination with the clock-mechanism and minute-hand spindle, a wheel mounted in and rotating with the said spindle, a driving wheel independent of the clock-mechanism, an hour-wheel receiving motion from said driving wheel, and provided with an annular row of teeth, detents normally in the path of said teeth, and projections on the aforesaid wheel of the minute-hand spindle, disposed in such positions that each of said projections encounters one of the aforesaid detents, and throws the same out of the path of the teeth of the hour-wheel, a type-wheel attached to the side of the hour-wheel, a platen movable toward and from the said type-wheel, and an impression receiving band passing between the platen and type-wheel, substantially as described and shown. 8th. In combination with the case A, clock mechanism and minute-hand spindle, the wheel C, provided with V-shaped notches in its periphery, and provided also with the sleeve C₁ mounted loosely on said spindle, the spring c secured at opposite ends respectively to the spindle and to the wheel C, the tubular hub O₁ secured to the frame, the type-wheels D, D₁ mounted loosely on the said hub, the segmental racks E, E₁ rigidly attached to said type-wheels and having V-shaped notches, the detent F arranged movably towards and from the aforesaid V-shaped notches, the spring a forcing the detent toward said notches, the type-wheel L secured to and rotating with the sleeve C₁, the driving wheel W independent of the clock-mechanism, the hour-wheel G receiving motion from said driving wheel and provided with teeth c₁, c₂, the detents I, I₁ normally in the path of said teeth, cams b, b₁ affixed to the latter detents, projections c, c₁ on the type-wheel L and each traversing one of the aforesaid cams, the type-wheel i attached to the side of the hour-wheel G, the platen P facing the respective type-wheels, the plunger H connected with the platen, the spring d forcing the platen from the type-wheels, the lever f pivoted intermediate of its length and connected at opposite ends respectively, with the detent F and plunger H, the lever N pivoted on the case and connected with the aforesaid plunger, the index plates T, T₁ secured to the exterior of the case, and indicators g, g₁, attached respectively to the type-wheel D, D₁, all combined to operate substantially as set forth. 9th. In combination with the type-wheels D, D₁ and L, platen P, and plunger H connected with said platen, the bridge R, lever S pivoted to said bridge, inking roller U pivoted to said lever, and the arm h attached to the plunger and coupled to the lever S, substantially as described and shown. 10th. In combination with the type-wheels D, D₁ and L, and platen P arranged movably toward and from said type-wheels, the spool V, feed rolls K, K₁, ratchet J attached to one of said rolls, the lever J connected at one end with the platen, the pawl k connected to the opposite end of the lever, the dog k₁ engaging the ratchet, and the band O passing from the spool between feed rolls, substantially as described and shown.

No. 31,788. Wall Ventilator and Stove Pipe Thimble. (*Ventilateur et dé de tuyau de poêle.*)

John P. K. Estrom, Advance, Mich., U.S., 22nd July, 1889; 5 years.

Claim.—1st. The case A B having the inward and upward extension E, and movable back or damper F, substantially as described. 2nd. The combination of the case A B, inward and upward extension E, damper or hinged back F with the lever or arm P, and rod Q, substantially as set forth. 3rd. The case A B having the extension E, thimble H, and opening I, substantially as specified. 4th. The combination of the front plate A having opening I, the adjustable curved rod L, the ledge or support K, and the screws M surrounding the opening I, substantially as and for the purpose described. 5th. The combination of the case A B, having an opening I, the thimble H, the ledge or bar K, and locking rod L, substantially as set forth. 6th. The combination and arrangement of the case A B, having the extension E, damper F, and air openings O, with the pipe J, substantially as specified.

No. 31,789. Process and Apparatus for Purifying Water. (*Procédé et appareil pour purifier l'eau.*)

Albert R. Leeds, Hoboken, N.J., U.S., 22nd July, 1889; 5 years.

Claim.—1st. The process of purifying water, which consists in decomposing an acid or salt solution by the action of an electric current, and introducing the gases thus produced into the water, substantially as described. 2nd. The process of purifying water, which consists in, first, filtering the water, and then introducing into the water the gases produced by the decomposition of an acid or salt solution, substantially as described. 3rd. The process of purifying water, which consists in, first, filtering the water, then introducing into the water the gases produced by the decomposition of an acid or salt solution, and then filtering the water again, substantially as described. 4th. The combination, with the closed tank A for containing the acid or salt solution, of the pipe B communicating with said tank and the body of water to be purified, and the terminals c of the electric circuit located in said tank in position to be in the solution, substantially as described. 5th. The combination, with the filter G, of the closed tank A for containing the acid or salt solution, the pipe B communicating with the discharge of the filter, and the terminals c of the electric circuit located in said tank in position to be in the solution, substantially as described. 6th. The combination, with the filters G, H, of the tank A for containing the acid or salt solution, the pipe B communicating with said tank, and with the pipe through which the water passes from one filter to the other, and the terminals c of the electric circuit located in said tank in position to be in the solution, substantially as described.

No. 31,790. Water Heater. (*Calorifère à eau.*)

Charles G. Jewett, Howell, Mich., U.S., 22nd July, 1889; 5 years.

Claim.—1st. In a water heater, the combination of a lower water ring, an upper water chamber G, a depending water leg I and connections h and i, substantially as described. 2nd. In a water heater, the combination of a lower water ring D, an upper chamber G, a depending central water leg, of connections h and i, of connections E and the tubes f, substantially as described. 3rd. In a water heater, the combination of a lower water ring D, an upper water chamber G, a depending water leg I having inclined steps e, of inclined heating tubes f, and the connecting pipes h, i and E, substantially as and for the purpose described.

No. 31,791. Rotary Engine. (*Machine rotatoire.*)

Julius M. Farmer, New York, N.Y., U.S., 22nd July, 1889; 5 years.

Claim.—In a rotary engine, the combination, with a bearing E provided with inlet and outlet ports a and b, of a steam chest F formed on the said bearing, and into which open the said inlet ports, a valve H held to slide over the said inlet ports, so that when one is open the other is closed, a disk D held to rotate on the said bearing, and provided with channels e, g, i and k adapted to register with the said inlet and outlet ports, slides e₂, g₂, i₂ and k₂ held over the said channels, so as to connect the latter alternately with the respective inlet and outlet ports, two or more sets of cylinders, J, J₁, K, K₁, held on the said disk D, and into which open the said channels in the disk, each set of cylinders consisting of two cylinders placed diametrically opposite each other, a piston, as L, L₁, N, N₁, held to slide in each of the cylinders, a piston-rod, as L₂, N₂, connecting the two pistons of one set of cylinders, a cross-head as L₃, N₃, formed in the middle of each piston-rod, each cross-head being provided with a slot, as L₄, N₄, extending at right angles to the piston-rod, and a fixed pin O held eccentrically to the centre of the said disk, and extending into the slots of the said cross-heads, substantially as shown and described.

No. 31,792. Combined Gate Brace and Lock. (*Aisselier et arrête-aisselier de barrière.*)

William Goddard, Komaka, Ont., 23rd July, 1889; 5 years.

Claim.—In a sliding gate, the locking brace D pivoted as shown, and having formed in it the slot G and notch H to receive the bolt F, substantially as shown and described.

No. 31,793. Machine for Finishing the Necks of Bottles. (*Machine pour finir les goulots des bouteilles.*)

Harry Semple, Steubenville, Ohio, and Charles N. Brady, Washington, D.C., U.S., 23rd July, 1889; 5 years.

Claim.—1st. A bottle finishing machine, having a plug rotative back and forth, adapted to enter one, finish the interior of the neck of a bottle, substantially as described. 2nd. A bottle finishing machine, having a plug rotative back and forth, and adapted to finish the interior of the neck of a bottle, and jaws also rotative back and forth and adapted to grasp the outside of the neck of the bottle, substantially as described. 3rd. In a bottle finishing machine, the combination of a shaft rotative back and forth, and an adjustable plug similarly rotative, substantially as described. 4th. In a bottle finishing machine, the combination of a shaft rotative back and forth, carrying an adjustable plug and adjustable jaws similarly rotative, a rod having a holder for the bottle and adapted to put in motion another rod, and thereby close the jaws upon the neck of the bottle, substantially as described. 5th. A bottle finishing machine, having fingers rotative back and forth, adapted to enter and finish the interior of the neck of a bottle or jar, substantially as described. 6th. A bottle finishing machine, having fingers rotative back and forth, adapted to enter and finish the exterior of the neck of a bottle or jar, and arms having a similar rotative movement adapted to hold and finish the outside of the neck of a bottle or jar, substantially as described.

No. 31,794. Brush. (*Pinceau.*)

Arabella M. Gorbell, St. John, N.B., 23rd July, 1889; 5 years.

Claim.—1st. The combination, with a bifurcated handle, of a reversible brush pivoted between the members of the same, substantially as shown and described. 2nd. The combination, with a bifurcated handle, of a double reversible brush pivoted between the members of the same and a locking bail, substantially as shown and described. 3rd. The combination, with a bifurcated handle, of a double reversible brush pivoted between its members, a locking bail sliding upon the handle, and locking devices arranged upon the brush, substantially as shown and described. 4th. The combination, with a handle formed of a single piece of wire, and a double reversible brush pivoted between the ends of the same, a locking bail sliding upon the handle, and locking devices arranged upon the ends of the brush head, adapted to engage with the handle and hold the brush rigidly in position, substantially as shown and described. 5th. The combination, with a handle formed of a single piece of wire, and bent substantially as described, of a double reversible brush pivoted between the ends of the handle, a locking bail sliding upon the handle, and the grooves formed upon the ends of the brush head adapted to engage the wires of the handle, substantially as and for the purpose specified. 6th. The combination, with a bifurcated handle, of a reversible brush pivoted between its members and a shield secured to the handle, substantially as shown and described. 7th. The combination, with a bifurcated handle, of a double reversible brush pivoted between its members, a locking bail and a shield pivotally secured to the handle, substantially as shown and described. 8th. The combination, with a bifurcated handle, of a double reversible brush pivoted between its members, a locking bail sliding upon

the handle, locking devices arranged upon the brush, and a shield formed of two wing portions pivotally secured to the handle, and adapted to operate, substantially as shown and described. 9th. The combination, with a handle formed of a single piece of wire, of a double reversible brush pivoted between its ends, a locking bail sliding upon the handle, a shield formed of two winged portions pivoted to the handle, and the spring arms for holding the shield against the brush, substantially as shown and described. 10th. In a brush, the combination, with a wire handle formed of a single piece of wire, bent as described, of a reversible double brush pivoted between the ends of the same, a locking bail sliding upon the handle, locking devices arranged upon the ends of the brush heads, a shield formed of two winged portions, pivoted at their inner ends to the handle, and the spring arms connecting the wings and locking bail, substantially as and for the purpose specified.

No. 31,795. Whiffletree. (*Palonnier.*)

John H. Willey, Manchester, N.H., U.S., 23rd July, 1889; 5 years.

Claim.—A whiffletree, consisting of the combination of a rigid bar, a spring secured in front of the bar, and parts attached to the spring extending backward beyond said bar, substantially as described.

No. 31,796. Semaphore Switch Signalling Apparatus. (*Appareil pour actionner les sémaphores au moyen de l'aiguille.*)

Amos Barnes, Pontiac, Mich., U.S., 23rd July, 1889; 5 years.

Claim.—The combination, with the post D, of the shaft F, lamp F₁, board F₂, crank arm G, rod G₁ and lever E, arranged substantially as described.

No. 31,797. Semaphore Signalling Apparatus. (*Appareil pour actionner les sémaphores.*)

Amos Barnes, Pontiac, Mich., U.S., 23rd July, 1889; 5 years.

Claim.—The combination, with post A, having arm A₁ pivoted thereto to swing up and down, and the upright shaft A₃ carrying light A₂ and pivoted thereto to turn, of the rod a₁ connected with arm A₁, crank a₂ connected to lower end of shaft A₃, rod a₃ joining rod a₁ and crank a₂, and the pivoted lever B provided with the adjustable weight B₁, and having rod a₄ connected to it, substantially as and for the purpose described.

No. 31,798. Method of and Means for Electrolysis of Substances in a State of Fusion. (*Méthode et moyens d'électrolyser les corps en fusion.*)

Martin Kiliani, Newhausen, Switzerland, 23rd July, 1889; 5 years.

Claim.—1st. In the electrolysis of fusible bodies, the hereinabove described process or method of procedure, the said process or method of procedure, consisting in keeping the one or both of the electrodes on the bath of fused material in motion. 2nd. In apparatus for the electrolysis of fusible bodies, means for keeping in motion one or both of the electrodes, or the bath of fused material. 3rd. In apparatus for the electrolysis of fusible bodies, the combination of an electrode e, a spindle f carrying the electrode and gearing by which the spindle may be rotated, substantially as described.

No. 31,799. Barrel Making Machine. (*Machine à faire les barils.*)

George Rehffuss, John G. Rehffuss and Martin O. Rehffuss, Philadelphia, Penn., U.S., 23rd July, 1889; 5 years.

Claim.—1st. The combination of the opposite heads provided with clamps for supporting the heads of the barrel, and grooves for receiving the ends of the staves, mechanism for feeding the staves in succession into said grooved heads, and pusher-arms for forcing the hoops over the staves, all substantially as specified. 2nd. The combination of the guideways for the staves, levers carrying stave-pushing fingers, and a rod to which both the ways and levers are pivoted, all substantially as specified. 3rd. The combination of the grooved stave-receiving heads, and means for feeding the staves in succession thereto, with fingers for retaining the barrel-heads, and spring-actuated carriers for said fingers, whereby they can be pushed out of the way as the staves are fed around the heads of the barrel, all substantially as specified. 4th. The combination of the grooved stave-receiving heads, with retaining fingers, and spring-actuated levers carrying the same and pivoted in respect to the fingers as described, whereby the fingers have a movement both radially from and toward the face of the head, all substantially as specified. 5th. The combination of the grooved stave-receiving head, fingers for retaining the barrel head thereon, the hoop-driving head and its arms, and mechanism whereby said hoop-driving head on its forward movement is caused to act upon said fingers and withdraw them from the path of the hoop, all substantially as specified. 6th. The combination of the opposite heads grooved for the reception of the ends of the staves, and pivoted at their upper ends so that they can be separated to permit the discharge of the barrel after the setting up of the same is completed, all substantially as specified. 7th. The combination of the opposite grooved heads, pivoted at their upper ends with a spring for drawing the lower ends of the heads together, and stops for limiting said inward movement, all substantially as specified. 8th. The combination of the opposite grooved stave-receiving heads, the hoop-driving heads and arms on one set of heads adapted to engage with the other set of heads as the hoop-driving heads are withdrawn after driving the hoops, whereby the stave-receiving heads are also retracted so as to discharge the barrel, all substantially as specified. 9th. The combination of the opposite

grooved stave-receiving heads, the hoop-driving heads, catch-arms serving to connect said heads together and insure a simultaneous retracting movement thereof, and means for tripping said catches when the retraction of the stave-receiving heads is completed, all substantially as specified. 10th. The combination of the opposite grooved heads which receive the staves during the setting up of the barrel, means for retracting said heads in order to release the barrel, and opposite retaining fingers, whereby the barrel is held in its proper central position during the retraction of the supporting heads, all substantially as specified.

No. 31,800. Attachable Runner.

(*Patin mobile de traîneau.*)

Edward K. Van Gorden, Horseheads, N.Y., U.S., 23rd July, 1889; 5 years.

Claim.—1st. The combination, with the bracket having an outwardly-projecting curved arm provided with a groove or recess, of the T-shaped collar having a lower cylindrical portion fitted in said groove or recess, and an upper normally-horizontal portion and the clip having its ends secured to said collar, substantially as shown and described. 2nd. The combination, with the bracket having the outwardly-projecting arms, one of which is provided with two opposite ears or lugs integral therewith, of the axle-box having the apertured check secured between said ears or lugs, the T-shaped collar having a lower cylindrical portion fitted on one of said arms, and having an upper normally-horizontal portion, and the clip having its ends secured thereto, substantially as shown and described.

No. 31,801. Treating Ores and Metallurgical Products. (*Traitement des minerais et des produits métallurgiques.*)

Edward H. Russell, Park, U.T., U.S., 23rd July, 1889; 5 years.

Claim.—1st. As an improvement in the art of extracting metal from ores and metallurgical products, the method of preparing the ore or product for the use thereon of a leaching solution, which consists in treating the ore with a solution of a compound or salt of copper, substantially as and for the purpose specified. 2nd. The process of extracting metals from ores and metallurgical products, which consists in subjecting the ore or product to the action of a solution of a copper salt or compound, and then treating the one or product with a hyposulphite solution, substantially as and for the purpose described. 3rd. The process of extracting metals from ores and metallurgical products, which consists in first treating the ore or product with a solution of sulphate of copper, and then subjecting the ore or product to the dissolving action of a hyposulphite leaching solution, substantially as and for the purpose described.

No. 31,802. Stove Drum. (*Poêle sourd.*)

Murdoch G. McEwen and John Dickson, Griswold, Man., 23rd July, 1889; 5 years.

Claim.—The combination of two sheets A, B, C, stays O, O, the cap D, and the extension stand composed of the parts G, H, J, K, L and M, the handle I, the inner pipe P, the handle S, the cleaner composed of parts T, U, and V, the warming plate Z, supports W, the bands X, movable clips Y, and the towel racks V, substantially as and for the purpose hereinbefore mentioned.

No. 31,803. Clip for Railroad-Switch Pivotal Tie Rods. (*Pince pour les tiges articulées des aiguilles de chemins de fer.*)

Axel A. Strom, Austin, Ill., U.S., 24th July, 1889; 5 years.

Claim.—1st. In a blank for a clip for use in pivotally connecting a tie-rod with a switch-rail, a single piece of metal having a body portion r, and arms p and p₁ extending transversely therefrom, substantially as described. 2nd. A blank B for a clip for use in pivotally connecting a tie-rod with a switch-rail, comprising a single piece of metal forming a body portion r, arms q, and arms p and p₁, substantially as described. 3rd. A metal clip for affording pivoted connection of a tie-rod with a switch-rail, having a body portion r, provided with bent arms p and p₁ extending from it, substantially as described. 4th. A metal clip for affording pivotal connection of a tie-rod with a switch-rail, comprising a body portion r having arms q extending from it, and bent arms p and p₁ extending from the body portion between the arms q, substantially as described. 5th. A clip for affording pivotal connection of a tie-rod with a switch-rail formed of a single piece of metal, and comprising a body portion r having arms q extending from it, and bent arms p and p₁ extending from the body portion between the arms q, and bent toward their end to form lips extending transversely to the body portion, substantially as described. 6th. The combination of a metal clip A comprising a body portion r having arms q extending from it, bent arms p and p₁ extending toward each other from the body portion between the arms q, and a tie-rod C fitting near one end between the ends of the arms p and p₁ and pivotally connected therewith, substantially as described.

No. 31,804. Switch Rail Chair.

(*Coussinet de rail d'aiguille.*)

Axel A. Strom, Austin, Ill., U.S., 24th July, 1889; 5 years.

Claim.—1st. In a head-chair, the combination of a bed-plate B, and a cross-bar C having slots s, and bent towards its opposite ends, thereby producing end portions z₁, and an intermediate housing, and secured to the bed-plate, substantially as described. 2nd. In a head-chair, the combination of a bed-plate B, and a cross-bar C having slots s, and bent obliquely from near the opposite outer sides of the slots, and having horizontal end portions z₁, and an intermediate housing h and secured to the bed-plate, substantially as described. 3rd. A head-chair comprising in combination, a bed-plate A, and a

cross-bar C formed of a slotted bar *n*, having a flange *m* extending at opposite ends short of the ends of the said bar, and the cross-bar being bent toward its ends and secured thereto to the bed-plate, substantially as described. 4th. A head-chair comprising in combination, a bed-plate A, and a cross-bar C, formed of a slotted bar *n* having a flange *m* bevelled at opposite ends towards the surface of the bar *n*, the cross-bar being bent toward its ends and secured thereto to the bed-plate, substantially as described. 5th. A head-chair comprising in combination, a bed-plate A, and a cross-bar C formed of a slotted bar *n*, having a flange *m* bevelled at opposite ends toward the surface of the bar *n*, the cross-bar being bent toward its ends to conform to the surface of the bed-plate, and welded and rivetted thereto toward its bent ends, substantially as described.

No. 31,805. Switch Stand.

(*Bâti d'aiguille de chemin de fer.*)

Axel A. Strom, Austin, Ill., U.S., 24th July, 1889; 5 years.

Claim.—1st. In a switch-stand, the combination, with the spindle and table, of a vertical tapering column B having a longitudinal groove *r* to receive the spindle, substantially as and for the purpose set forth. 2nd. In a switch-stand, the combination, with the spindle, and table, of a vertical tapering column B provided with ribs *o*, and having a longitudinal groove *r* to receive the spindle, substantially as and for the purpose set forth. 3rd. In a switch-stand, the combination of a vertical tapering column B having a longitudinal groove *r*, and provided with a flat base A carrying a rigid bearing *q*, a table C upon the column, a rotatory spindle E extending outside the column beyond the upper end of the same to form the target or semaphore rod, and having a crank H at its lower end working in the bearing *q* and normally off a dead centre, and a lever D connected with the spindle, substantially as described.

No. 31,806. Tie Rod for Switch Rails.

(*Tige pour rails d'aiguilles.*)

Axel A. Strom, Austin, Ill., U.S., 24th July, 1889; 5 years.

Claim.—The method of manufacturing a connecting-rod or tie-bar, which consists in bending towards each other the opposite ends of a bar or bars of metal, thereby forming each bar into a clamp A, and welding to one or each end of a bar one of said clamps, substantially as described.

No. 31,807. Manufacture of Clips for Connecting Tie-Bars with Switch Rails.

(*Fabrication des pinces pour raccorder les triangles avec les rails des aiguilles de chemins de fer.*)

Axel A. Strom, Austin, Ill., U.S., 24th July, 1889; 5 years.

Claim.—1st. The improvement in the art of manufacturing clips A, which consists in forming a sheet-metal blank B with a head and a cross-piece *r*, then bending the head to fit against a rail, and the cross-piece to form a socket, substantially as described. 2nd. The improvement in the art of manufacturing clips A, which consists in forming a sheet-metal blank B, with a head C comprising the parts *r* and *r*₁, and with a cross-piece *r*₂, then bending the parts *r*, *r*₁ and *r*₂ respectively into a head E to fit against the web of a rail, a neck F to fit upon the rail-flange, and a socket G to receive a tie-bar, substantially as described. 3rd. The improvement in the art of manufacturing clips A, which consists in forming a sheet-metal blank B, with a head C comprising the part *r*, and tapering part *r*₁, and with a cross-piece *r*₂, then bending the parts *r*, *r*₁ and *r*₂ respectively into a head E to fit against the web of a rail, a neck F to fit upon the rail-flange and a socket G, and striking up a ridge *n* on the head and neck and neck portions, substantially as described.

No. 31,808. Rail Brace. (*Epaule de rail.*)

Axel A. Strom, Austin, Ill., U.S., 24th July, 1889; 5 years.

Claim.—1st. A rail-brace A comprising a base B provided with offsets *r*, and a hollow abutment C rising from the base and flattened at its apex, substantially as described. 2nd. A rail-brace A comprising a base B provided with offsets *r*, and a hollow abutment C rising from the base and flattened at its apex *p* into a shoulder *o*, substantially as described.

No. 31,809. Railway Frog. (*Rail de croisement.*)

Axel A. Strom, Austin, Ill., U.S., 24th July, 1889; 5 years.

Claim.—1st. In a railroad-frog or the like, the combination, with adjacent rails, of a brace C formed of a bent metal bar having foot portions *n* at opposite ends, and an intermediate trough *p*, substantially as and for the purpose set forth. 2nd. In a railway-frog, the frog-point comprising a point-rail B₁, and a point-rail B secured to the rail B₁, and having its wedge-shaped end bevelled on its upper side, as shown at *r*, in a downward direction toward the pivoted end of the frog, substantially as described. 3rd. In a railway-frog or the like, the combination, with adjacent rails, of a brace C comprising a body portion *o*, having foot portions *n* at opposite ends extending laterally of the body portion, and a trough *p* between each foot portion and the adjacent end of the body portion, substantially as and for the purpose set forth. 4th. A rail-frog having its point braced on opposite sides by means of flanged bearings resting flatwise against the adjacent flanges of the wingrails, and secured flatwise to the web portion of the point, substantially as described.

No. 31,810. Railway Switch Stand.

(*Bâti d'aiguille de chemin de fer.*)

Axel A. Strom, Austin, Ill., U.S., 24th July, 1889; 5 years.

Claim.—1st. In a switch-stand, the combination, with the standard portion, of a vertical rotary spindle provided on its lower end with a

crank, and a connecting rod terminating in a yoke engaging the crank, whereby turning of the spindle moves the connecting-rod in a straight line, substantially as described. 2nd. In a switch-stand, the combination, of the standard-portion, a connecting-bar having a transversely slotted yoke formed on its inner end, a vertical spindle terminating at its lower end in a crank inserted into the slot of the yoke, and lateral guides for the yoke, substantially as described. 3rd. In a switch-stand, the combination, of the standard-portion, a vertical spindle within the same terminating at its lower end in a crank, a connecting-bar terminating at its inner end in a transversely slotted yoke, lateral guides for the yoke, and a flanged washer moving in the transverse slot of the yoke and engaged by the lower end of the crank, substantially as described.

No. 31,811. Switch Stand.

(*Bâti d'aiguille de chemin de fer.*)

Axel A. Strom, Austin, Ill., U.S., 24th July, 1889; 5 years.

Claim.—1st. In a switch-stand, the combination, of a standard A supporting the lower stationary part *n* of a clutch C, a recessed annular table B having a sleeve B₁ extending into the standard, the upper part *m* of the clutch extending into the lower end of the sleeve B₁ and longitudinally, but not axially, movable therein, a spindle D extending through the standard and clutch, a crank D₁ at the end of the spindle, a spring G surrounding the spindle in the sleeve B₁ and pressing on the clutch, a yoke F secured to the spindle and confining the spring at its upper end and an operating-lever I, substantially as described. 2nd. In a switch-stand, the combination, of a standard A supporting a rectangular socket *q*, a clutch C having a lower part *n* provided with a rectangular shank *n*₁ fitting into the socket *q*, a recessed annular table B having a sleeve B₁ extending into the standard and rectangular on its interior near the lower end, the upper part *m* of the clutch having a rectangular shank *m*₁ fitting into the lower end of the sleeve B₁ and longitudinally movable therein, a spindle D extending through the standard and clutch, a crank D₁ at the lower end of the spindle, a yoke F secured to the spindle, a spring G confined in the sleeve B₁ between the clutch and yoke, and an operating-lever I, substantially as described. 3rd. In a switch-stand, and having an annular peripherally-recessed revoluble table normally interlocked with the spindle, and a clutch having a stationary part and a rotary part actuated against the resistance of a confined spring G by turning the interlocked spindle, a yoke F secured to the spindle and provided with a flange *l*, and extending below the flange into the opening in the table, and a lever I pivotally connected with the yoke and normally extending into a peripheral recess in the table, substantially as described. 4th. A switch-stand comprising in combination, a standard A having in its base a web *r*, rigidly supporting a rectangular socket *q*, a clutch C having a lower part *n* provided with a rectangular shank *n*₁ fitting into the socket *q*, a recessed annular table B having a sleeve B₁ extending into the standard and rectangular on its interior near the lower end, the upper part *m* of the clutch having a rectangular shank *m*₁ fitting into the lower end of the sleeve B₁ and longitudinally movable therein, a spindle D extending through the standard and clutch, and having a crank D₁ at its lower end, a yoke F secured to the spindle and provided with a flange *l* and extending below the flange into the opening in the table, a spring G surrounding the spindle in the sleeve B₁, a sleeve H in the sleeve B₁ between the upper end of the spring and the yoke, and an operating lever I, substantially as described.

No. 31,812. Folding Bed, Stretcher and Covered Dooley Combined, for Invalid, Camp and Military Use.

(*Lit pliant, civière, et urinal couvert combinés à l'usage des malades, des camps et des militaires.*)

Alexander A. Vernon, Hamilton, Ont., 24th July, 1889; 5 years.

Claim.—1st. In an invalid bed, the combination of a detachable frame A hinged at the centre *a*, and having an internal ledge *c* provided at each end with indented ratchet teeth K, the inner sections E, F, G, H hinged together, thus forming a frame with headed pins P on its surface, the end brace supports L and the swivel handles T, substantially as and for the purpose hereinbefore set forth. 2nd. The combination, in a camp bed, of the inner and outer frames, with their attachments C, K, P and T, the attachable upper studs N provided with the cross braces O, angle pieces R for the attachment of covering thereto, and the longitudinal rod S, substantially as and for the purpose hereinbefore set forth. 3rd. The combination, in a military and hospital stretcher, the swivel handles P attached to the hinged frame A having an internal projection C with ratchet teeth at each end, the inner sectioned frame with head end supports L, and provided on its surface with the headed pins P to fasten canvas thereto, substantially as and for the purpose hereinbefore set forth. 4th. In a dooley, the longitudinal carrying pole S attached to and secured underneath the angle frames R, the cross-braces O, and the whole of the device which is denoted by letters, all formed, arranged and combined substantially as and for the purpose hereinbefore set forth.

No. 31,813. Composition for Rendering Wood Indestructible by Worms, Insects, Moisture or other causes.

(*Composition pour rendre le bois indestructible par les vers, les insectes, l'humidité et autres causes.*)

David H. Cameron, Stanhope, Que., 24th July, 1889; 5 years.

Claim.—A compound of pitch tar, rosin, coal tar, tallow and asphaltum mixed together in the following proportions, viz.: five pounds of pitch tar, five pounds of rosin, one pound of coal tar, one pound of tallow, one-half pound of asphaltum, boiled together and tempered

to the desired hardness by using tallow and rosin, and to be applied to the wood with a brush or broom which is then sprinkled with sand, which is rubbed into the wood with a roller made for the purpose, the whole as and for the purposes set forth.

No. 31,814. Lifting Implement. (*Cric à main.*)

Wilfrid Belisle, Canaan, Ont., 24th July, 1889; 5 years.

Claim.—In a lifting implement having the guide plate A, guides C, retaining loop D, and lifting loop F, the lifting rod B placed diagonally, as shown, in the guides C, and lifting and retaining loops F and D, substantially as shown and described.

No. 31,815. Horse Power. (*Munège à un cheval.*)

John C. Pruet, El Dorado Springs, Mo., U.S., 24th July, 1889; 5 years.

Claim.—1st. The combination, substantially as described, of the master-wheel having oppositely-inclined V-shaped grooves 1 and 2 extending from the centre of the periphery to the respective edges, two similarly-grooved pinions mounted to mesh with the master-wheel and having the lower ends of their shafts fitted with worm-wheels, a counter-shaft arranged between the worm-wheels and provided with a worm or worms to engage said wheels, and a sweep secured to the upper face of the master-wheel. 2nd. The combination, substantially as described, of the master-wheel having oppositely-inclined grooves, the two similarly-grooved pinions engaging the master-wheel at diametrically-opposite points, and having their shaft fitted near their lower ends with worm-wheels, the counter-shafts mounted between the worm-wheels and fitted with worms to engage therewith, and a sweep secured to the upper face of the master-wheel.

No. 31,816. Vehicle Axle. (*Essieu de voiture.*)

William H. Wright, Buffalo, N.Y., U.S., 24th July, 1889; 5 years.

Claim.—In vehicle axles, the combination, with the axle A, having the collar B and screw-threaded portion a, of the collar C having the flange D, smooth portion C', C'', and octagonal wrench-section e, the skein F provided with the bell-shaped end, having recesses f and b, and the externally screw-threaded section, as shown, and the swivel nut E, as and for the purpose stated.

No. 31,817. Washing Machine.

(*Machine à blanchir.*)

William H. Goss, Yonkers, N.Y., U.S., 24th July, 1889; 5 years.

Claim.—The combination of the tank, the partition F, the lever C and the compressors A and B, all constructed and arranged substantially as and for the purpose specified.

No. 31,818. Lifting Jack. (*Cric.*)

Axel A. Strom, Austin, Ill., U.S., 24th July, 1889; 5 years.

Claim.—1st. In a lifting jack, the combination, with the standard lifting bar and operating lever, of a clutch for raising the lifting bar or holding it in raised position, and comprising a collar on the bar, provided with one or more reduced bearings, near the centre of its inner side, and a bearing plate for each reduced bearing having a recess formed in its back transversely of the plate, and fitting upon the reduced bearing, whereby the bearing plate is pivotally supported between the collar and lifting bar, substantially as and for the purpose set forth. 2nd. In a lifting jack, the combination, with the standard lifting bar and operating lever, of a clutch for raising the lifting bar or holding it in raised position, and comprising a collar supported on the bar and provided near the centre of its inner side with one or more reduced grooved bearings, each having a rounded bar in the groove, and a bearing plate for each reduced bearing, having a recess formed in its back, transversely of the plate, and fitting over the rounded bar, whereby the bearing plate is pivotally supported between the collar and lifting bar, substantially as and for the purpose set forth.

No. 31,819. Switch Rail Chair.

(*Coussinet de rail d'aiguille.*)

Axel A. Strom, Austin, Ill., U.S., 24th July, 1889; 5 years.

Claim.—1st. A head-chair, comprising, in combination, a bed-plate A, a cross-bar B, having slots q and plates r interposed between the cross-bar, toward its opposite ends and the bed-plate, the cross-bar plates r and bed-plate being fastened together, substantially as described. 2nd. A head-chair, comprising, in combination, a bed-plate A, an angular cross-bar B, having slots q and plates r, interposed between the cross-bar toward its opposite ends and the bed-plate, the cross-bar and plates being fastened together and to the bed-plate, substantially as described. 3rd. A head-chair, comprising, in combination, a bed-plate A, and an angular cross-bar B, having slots q and riveted to the bed-plate, through plates r, toward opposite ends of the cross-bar, substantially as described. 4th. A head-chair, comprising, in combination, a bed-plate A, a cross-bar B, having slots q, plates r interposed between the cross-bar, toward its opposite ends, and the bed-plate and rivets p extending through the parts B, r and A, the said parts and rivets being welded together, substantially as described. 5th. A head-chair, comprising, in combination, a bed-plate A, an angular cross-bar B, having slots q, plates r interposed between the horizontal portion of the cross-bar toward its opposite ends and the bed-plate, and rivets p extending through the parts B, r and A, the said parts and rivets being welded together substantially as described. 6th. A head-chair, comprising, in combination, a bed-plate A, a cross-bar B, having slots q, plates r interposed between the cross-bar, toward its opposite ends and the bed-plate, the cross-bar plates r and bed-plate being fastened together, and a bar m secured underneath the cross-bar, between the plates r, substantially as described.

No. 31,820. Railway Chock.

(*Heurtoir de voie de fer.*)

Thomas B. Rogers, Brooklyn, N.Y., U.S., 25th July, 1889; 5 years.

Claim.—1st. The combination in a chock or stop-block for railways, with the clamping-plates to embrace the rail, of a forked lever whose arms embrace the plates, a pivotal bolt passing transversely through the arms and plates, and whose head and nut afford bearings for the outer faces of said arms, an angular projection upon the inner face of one of said arms, having its apex bisected by the bolt, and a counter part angular recess in the outer face of a projection upon the proximate plate having its re-entrant angle in like manner bisected by the bolt, whereby the arms of the lever are in constant contact with the plates, each at two diametrically-opposite points, one on each side of the transverse pivotal bolt, substantially in the manner and for the purpose herein set forth. 2nd. The combination, substantially as set forth, with the forked lever, the clamping-plates embraced by the lever and adapted to embrace a railway-rail, the transverse loose bolt upon which the lever is pivoted, the opposed cams formed upon the opposite faces of either lever-arm, and the proximate plate of a swinging latch pivoted to the lever to drop transversely upon the outer edges of the plates in engagement with notches therein, substantially in the manner and for the purpose herein set forth. 3rd. The combination, substantially as set forth, of the forked lever, the clamping plates embraced by the lever and adapted to embrace a railway rail, the transverse loose bolt upon which the lever is pivoted, the opposed cams formed upon the opposite faces of either lever arm and the proximate plate, a swinging latch pivoted to the lever to drop transversely upon the outer edges of the plates in engagement with notches therein, and a padlock fitted to an aperture in the lever in position to prevent a movement of the latch out of the notch, substantially in the manner and for the purpose herein set forth.

No. 31,821. Conveyor. (*Racloir à chaîne sans fin.*)

Daniel M. Maxon, Bay, Mich., U.S., 25th July, 1889; 5 years.

Claim.—1st. A conveyor flight consisting of a bar of oblong form having its central portion twisted to a position at a right angle with the end portions, substantially as set forth. 2nd. A device for securing a flight to a conveyor chain, consisting of an elongated link having its ends curved upward, and having one end arranged to pass freely over the chain, and having the sides of its opposite end partially closed to form a clutch, substantially as and for the purpose set forth. 3rd. In a conveyor, the combination of a chain and the flights provided with a horizontal portion beneath the chain, and vertical wing portions extending upon each side of the chain, and the elongated fastening link having its sides beneath the flights, and its ends upturned and reaching over the chain on each side of the said flights, and provided on one of the said upturned ends with a narrow end adapted to grasp the vertical link between the adjacent horizontal links, substantially as and for the purpose set forth.

No. 31,822. Radiator Valve. (*Valve de calorifère.*)

William E. Wood, Utica, N.Y., U.S., 25th July, 1889; 5 years.

Claim.—1st. In a steam or water valve, the valve disc, the operating toggle lever connected therewith, a rocking arm or foot piece connected with the toggle lever for forcing the valve open, a spring to act on the foot piece to force the valve to its seat, and means for automatically engaging said rocking arm or foot piece to hold the valve open to its full capacity, substantially as described. 2nd. In a steam or water valve, the combination of the valve disc, the rocking arm or foot piece, the toggle levers connected to the valve, and the rocking arm or lever connected to the toggle lever through a link connection, substantially as described. 3rd. In a steam and water valve, the combination of the valve disc, a toggle lever connected to the valve disc and to the casing to operate within the valve body, and a spring for acting on the toggle levers located outside the body or casing, substantially as described. 4th. In a steam and water valve, the combination of the valve disc, a toggle lever connected to the valve disc, a rock shaft having a rocking arm connected thereto within the valve body, a link connecting the rocking arm with the toggle lever, a spring located outside the valve body to act on the rock shaft to force the valve disc to its seat, substantially as described.

No. 31,823. Glass Polisher. (*Polissoir de verre.*)

Charles G. Fliok, Toronto, Ont., 25th July, 1889; 5 years.

Claim.—1st. A tank F provided with a revolving mixer G, and having a hole I in its bottom stopped by the vertically adjustable spindle J, in combination with the spindle K, crank L, sliding bar M and arm N, arranged substantially as and for the purpose specified. 2nd. A tank F provided with a revolving mixer G, and having a hole I in its bottom stopped by the vertically adjustable spindle J, in combination with the spindle K, crank L, sliding bar M, arm N, slanting spout O, and sponge Q, substantially as and for the purpose specified. 3rd. A tank F provided with a revolving mixer G, and having a hole I in its bottom stopped by the vertically adjustable spindle J, in combination with the spindle K, crank L, sliding bar M, arm N, slanting spout O, sponge Q, wheel A, bottomless box C, slanting spout D, and pail E, substantially as and for the purpose specified.

No. 31,824. Medical Compound.

(*Composition médicale.*)

Andre Roberts, Pattonville, Texas, U.S., 25th July, 1889; 5 years.

Claim.—The herein-described medical compound consisting of the extracts of eucalyptus, lady's slipper, gentian, balmony and the oil of sassafras, in substantially the proportions specified.

No. 31,825. Drawing Apparatus.*(Machine à étirer.)*

William T. Worden, Holdrege, Neb., U.S., 25th July, 1889; 5 years.

Claim.—1st. In a drawing apparatus, the combination, of a main frame, a folding frame hinged to the lower front edge of the same, and having a groove to receive a glass plate and drawing sheet and suitable locking catches, and a head rest hinged to the upper rear edge of said main frame, substantially as set forth. 2nd. The combination in a drawing apparatus of the frame A, the board or arm K hinged to the lower side thereof, the board or arm U hinged to the upper side of the frame, and the frame or bail W hinged or pivotally connected to the outer end of one of said boards or arms, and adapted to be secured to the other for the purpose set forth, substantially as described. 3rd. The combination in a drawing apparatus of the frame A, the arms or boards hinged to the lower and upper sides thereof, one of said arm or boards having a catch or detent, a frame or bail W hinged or pivoted to the other arm or board, and adapted to be engaged by said catch or detent for the purpose set forth, substantially as described. 4th. The combination in a drawing apparatus of the frame A, the arm or board K hinged to the lower side thereof, the arm or board U hinged to the upper side of said frame, the right-angled plates secured on opposite sides of the free end of arm U, and the frame or bail W having the spindles or pintles engaging openings in the right-angled plates and in the arm U, substantially as described. 5th. The combination, with a drawing apparatus, comprising the frames A and W, and the connecting arms between the upper and lower sides thereof, of the bail hinged or pivoted to the frame A and adapted to fold upon the upper arm for the purpose set forth, substantially as described. 6th. The combination, with the drawing apparatus having the base arm or board K, of the tripod or support having the clamping arms adapted to engage the said board, and the screws to compress the said arms or jaws thereon, substantially as described. 7th. The combination, with a drawing apparatus having the base board or arm K, of the tripod or support having the clamping jaws, the latter having their upper ends rounded or convexed, and provided with the vertical extensions or flanges for the purpose set forth, substantially as described. 8th. In a drawing apparatus, the combination, of the main frame, the clamping frame hinged thereto, the base board hinged to said main frame, hinged frames to support the main frame in an upright position, and the tripod or support having the clamping arms adapted to engage the said base board, substantially as set forth. 9th. The combination, with a drawing frame, of a head rest to the upper edge of said drawing frame, and a supporting frame connected pivotally to the free end of said head rest, substantially as set forth. 10th. In a drawing apparatus, the front frame carrying the glass plate and drawing sheet, the top arm or board U, bottom arm or board K, and rear end piece W, all of said parts being hinged or pivoted together so as to fold one upon the other, as set forth. 11th. The combination, with a drawing frame, of a hinged head rest, a supporting frame connected pivotally to the free end of the latter, and a bail pivoted to the drawing frame and resting with its free end upon the head rest, substantially as set forth. 12th. The combination of the drawing frame, the hinged head rest, the supporting frame pivoted to the free end of the latter, the hinged base-board, a bail pivoted to the drawing frame and adapted to rest upon the head-rest, and a tripod having clamping jaws adapted to engage the base-board, substantially as set forth.

No. 31,826. Heat Indicator for Ovens.*(Indicateur de la chaleur des fourneaux.)*

John Stidham, Rochester, Penn., U.S., 25th July, 1889; 5 years.

Claim.—1st. The combination, with the oven door, of the plates B and B', central arbor *b*, bell-crank lever C having wrist-pin *c* on its lower end, chains C₁ and C₂, gravity-lever D and the bars E, all arranged and operating substantially as described. 2nd. The combination, with the oven-door, of the plates B and B', the central arbor *b* carrying a hand on its outer end adapted to engage with the dial-plate, the bell-crank lever C having the upper end of its longer arm provided with a series of apertures, the chain C₁ connected at its upper end to said arm of the bell-crank lever, and passing around the arbor *b*, the gravity-lever D secured to the lower end of a chain C₂ which is also secured to the arbor *b*, the bars E pivotally secured to the oven-door at their outer ends and formed with bevels at their inner opposing ends, and an angular clip within which the inner opposing ends of the said bars E rest, substantially as described.

No. 31,827. Hatching Machine.*(Machine à sérancer.)*

Alpheus W. Montgomery, New York, N.Y., U.S., 25th July, 1889; 5 years.

Claim.—1st. In a hatching machine, the combination of delivery rolls, advancing and retreating detaining pins, means substantially as described for carrying said pins and causing them to advance and retreat, a chain carrying combing pins, guides for controlling the movements of said combing pins, whereby the said pins are inclined to facilitate their entrance into the fibre held by the detaining pins and moved into position to hold the fibre properly against the action of the delivery rolls while being withdrawn thereby from the combing pins, substantially as described. 2nd. In a hatching machine, the combination of detaining pins, means substantially as described, for carrying said pins and causing them to advance and retreat delivery rolls, and a hatching chain following the path of an irregular curve at one point approaching and approximating the path of the detaining pins, and afterwards approaching the delivery rolls in an arc of reduced radius, and guides for causing the chain to follow said path, substantially as described. 3rd. In a hatching machine, the combination of advancing and retreating detaining pins, means substantially as described, for carrying said pins and causing them to advance and retreat, a chain carrying combing pins following the path of an irregular curve at one point approaching the detaining pins in an arc of reduced radius and afterwards approaching the de-

livery rolls in an arc of reduced radius, delivery rolls and guides for controlling the movements of said combing pins, whereby said pins are inclined to facilitate their entrance into the fibre held by the detaining pins and moved into position to hold the fibre properly against the action of the delivery rolls while being withdrawn thereby from the combing pins, substantially as described. 4th. In a hatching machine, the combination of a revolving cylinder, detaining pins carried by said cylinder, and a hatching chain travelling in a path approximating the curve of the periphery of said cylinder at the points where the detaining pins and combing pins meet, and guides for causing the chain to follow said path, substantially as described.

No. 31,828. Combined Rail Chair, Fish Plate and Nut Lock. *(Coussinet de rail, éclisse et arrête-écrou combinés.)*

Giles Bowler, Dundalk, Ont., 25th July, 1889; 5 years.

Claim.—A metal chair composed of the base A, and sides C designed to embrace the base and web of the rails B, in combination with the key E embedded in a groove formed in the top of the base A immediately below the nuts D of the fish-plate bolts, substantially as and for the purpose specified.

No. 31,829. Waggon Reach Coupling.*(Joint de flèche de wagon.)*

Elmer S. Cushman, Delhi Mills, Mich., U.S., 25th July, 1889; 5 years.

Claim.—1st. The combination, with the wagon reach coupling D, of the follower plate I, and set-screw K, substantially as and for the purpose described. 2nd. The combination, in the coupler D of the top plate E, wings *e*, depending flanges F, the bottom plate G, and binding screw K, substantially as described.

No. 31,830. Ladder. *(Echelle.)*

Eugene A. Sherman, Plover, Wis., U.S., 25th July, 1889; 5 years.

Claim.—1st. An improved ladder, consisting of the side bars A, A one of which is provided with the slot *d*, the rungs B pivoted in sockets *b*, and the brace D, consisting of a strip of metal pivoted at one end in the slot *d*, and provided at its opposite end with means for engaging the projecting end of one of the pivot pins of the lower rung, substantially as described. 2nd. The combination, with a ladder, of the plates H pivoted to the side bars of said ladder, and provided with hooks at each end, and a pivoted plate I having a single hook, substantially as herein described.

No. 31,831. Manufacture of Files, Rasps, Rimers and similar Articles. *(Fabrication des limes, râpes, alésoirs et objets similaires.)*

Fortune E. Leclercq, Paris, France, 26th July, 1889; 5 years.

Claim.—The manufacture and use of files, rasps, rimers, etc., formed of successive rows of teeth, separated by discharge grooves arranged obliquely with relation to the axis of the file, or other tool, substantially as hereinbefore described and illustrated in the accompanying drawing.

No. 31,832. Machine for Closing the Ends of Metal Tubes. *(Machine à fermer les bouts des tubes métalliques.)*

John P. Kennedy, New York, N.Y., U.S., 26th July, 1889; 5 years.

Claim.—1st. In a machine for closing the ends of tubes, the combination, with the hammer, of an anvil block, having a chamber, a mandrel placed vertically in said chamber, and the means for operating the mandrel, as described. 2nd. In a machine for closing the ends of tubes, the combination, with the hammer, of a chambered anvil block, a vertical mandrel, pivotally bolted at its lower end in the chamber of the block, and a sliding jaw in the top of the block, whereby the mandrel may be tilted forward for applying or removing a tube, or be supported in a vertical position under the hammer head. 3rd. In a machine for closing the ends of metal tubes, the combination, with the chambered anvil block and mandrel pivotally secured therein, of a forked lever embracing the mandrel and a lever for moving the mandrel in the chamber of the anvil block, as described. 4th. In a machine for closing the ends of tubes, the combination, with the hammer block having a die adapted to work over a mandrel of a chambered anvil block, a mandrel placed vertically therein, a forked lever for raising a tube on the mandrel, and a lever connecting with a sliding jaw in the top of the anvil, as and for the purpose described.

No. 31,833. Scythe. *(Faux.)*

Jean B. Revollier, Rives, France, 26th July, 1889; 5 years.

Claim.—1st. The combination of rings 1 and 2 for connecting the blade and handle of a scythe, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of socket D, gib *d*, ring 2 and wedge or outer C₁, substantially as and for the purpose hereinbefore set forth. 3rd. The methods of fitting the blade of the scythe to the ring 1, substantially as and for the purpose hereinbefore set forth.

No. 31,834. Hot Air Heating Stove.*(Calorifère à air.)*

William J. Copp, Hamilton, Que., 26th July, 1889; 5 years.

Claim.—A hot air heating stove, consisting of a heater A, having a base with a series of perforations B, the columns C₁, having interiors C, the air drum D having cold air ducts C₃ and *d*, and its cir-

cular raised top D₁, with outlet D₂, the longitudinal tubes E connected to their end chambers E₂ and E₃, and provided with smoke outlet E₅, and the cleaning out ports F, with damper G, all formed, arranged and combined as and for the purpose hereinbefore set forth.

No. 31,835. Brick Kiln. (*Four à briques.*)

Walter B. Wright, Chicago, Ill., U.S., 26th July, 1889; 5 years.

Claim.—1st. The combination of a kiln, with an auxiliary furnace, pipes for supplying a drying fluid, which said pipes pass through such furnace and open into the kiln, and pipes for supplying fluid fuel which open directly into the kiln, and which also open into such auxiliary furnace and thus heat the fluid passing therethrough. 2nd. The combination, of a kiln with fluid fuel pipes leading thereto, an auxiliary furnace, drying fluid pipes which pass through such furnace, a burner nozzle which opens from such fluid fuel pipe into the furnace, and a series of compound valves with discharge nozzles about such kiln, and connected both with the fluid fuel pipes and the drying fluid pipes, so as to serve either as discharge nozzles for the drying fluid or burner nozzles for the fluid fuel.

No. 31,836. Fluid Fuel Smelting Furnace.

(*Fourneau de fusion à combustible liquide.*)

Walter B. Wright, Chicago, Ill., U.S., 26th July, 1889; 5 years.

Claim.—1st. The combination of a regenerative furnace, with a series of apertures along each side for the admission of the fluid fuel, a checker work for regenerating beneath such apertures, and deflecting plates upon such checker work and immediately beneath each of such apertures, so as to protect the upper part of such checker work from the current of fluid fuel. 2nd. In a regenerative furnace, the combination of the hearth with a chamber on each side thereof, containing regenerating checker work through which the air may pass into the furnace, a series of apertures above such checker work through which the fluid fuel passes, and sliding protector plates in front of such apertures, as shown, adapted to cover the same, when fluid fuel is not being discharged therethrough, as and for the purpose described. 3rd. In a regenerative furnace, the combination of the hearth, with air and fluid fuel passages or pipes, which open therein at opposite sides thereof, and a fluid fuel supply reservoir connected therewith, and valves in the several connections, a lever operatively connected with and controlling all of such valves and protector plates in front of such apertures connected with such lever. 4th. In a regenerating furnace, a steam supply pipe having a three-way valve therein, and branches therefrom leading to the opposite ends of the furnace, a fluid fuel supply pipe, having a three-way valve and pipes leading therefrom through the opposite ends of the furnace, discharge valves or burners, into which said pipes open, and apertures opening into the furnace at the opposite ends through which such valves project, air-supply passages opening into the space beneath the degenerating checker-work of the furnace, and valves therein which alternately connect such passages with the open air and with the flue, a lever operatively connected with and controlling all of such valves, protector plates in front of said fluid fuel, discharge valves or burners, the same suspended and connected with said operating lever.

No. 31,837. Dumping Car. (*Char-tombereau.*)

James W. Alfred Wall, Penn., U.S., 26th July, 1889; 5 years.

Claim.—1st. The combination, with the truck body and the central transverse timber thereof, of the plate E₂ having arms extending lengthwise of the truck, and the transverse truss rods E connecting the side timbers of the truck body and bearing on said arms, substantially as shown and described. 2nd. The combination, with the truck body and the central transverse timber thereof, of the plate E₂ on said transverse timber, and formed with a hole to receive the king bolt, and with arms extending lengthwise of the truck and formed with hooked ends, and the transverse truss-rods E connecting the said timber of the truck body bearing on said arms and engaging said hooked ends, substantially as shown and for the purpose specified. 3rd. The combination, with the timber G, of the strip H secured to said timber and bent to form a horizontal portion at the top and bottom of said timber, and with inclined portions connecting said horizontal portions, substantially as shown and described. 4th. The combination, with the timber G, of the strip H secured to said timber, and bent to form a horizontal portion at the top and bottom of said timber, with inclined portions connecting said horizontal portions, and with one end extended, as at H₂, to engage a spring-catch upon the body of the car, substantially as and for the purpose specified. 5th. The combination, with the timber G, of the strip H secured to said timber, and bent to form a horizontal portion at the top and bottom of said timber, with inclined portions connecting said horizontal portions, with one end extended, as at H₂, to engage a spring catch upon the body of the car and the brace strips I and J, substantially as shown and described. 6th. The combination, with the car-body and timber G, of the truck and locking latch C pivoted to said truck, and formed with parallel arms adapted to embrace said timber upon opposite sides, substantially as shown and described. 7th. The combination, with the car body, of the strip O secured to the end of the side timber and covering the end thereof, the vertical strip P resting upon the strip O, the vertical rod R, the strip S embracing said strip P and the angle-iron T, arranged at right angles to the strip O, substantially as shown and described and for the purpose specified.

No. 31,838. Sled. (*Traineau.*)

John H. Edward, Whitewater, Wis., U.S., 26th July, 1889; 5 years.

Claim.—1st. In a front sled, of the character described, standards, as at B, having one or more legs L, hubs G₁, journal pieces G₂, cross-bars C and rod or stop G, constructed and combined substantially as

set forth. 2nd. In a rear sled of the character described, the combination of the standards having the legs, or means for fastening them to the runners, the hubs and the journal pieces, the cross-bar, or sill which connects the standards and the bar or stop E, substantially as set forth.

No. 31,839. Smoking Pipe. (*Pipe de fumeur.*)

John Brindle, Liverpool, Eng., 26th July, 1889; 5 years.

Claim.—In combination, in a smoking pipe, a removable inner clay lining, an enclosing casing made in separable parts, a mouthpiece and bands or like means for securing the parts of the casing enclosing the clay lining and connecting the pipe casing and mouthpiece, as set forth.

No. 31,840. Nail Machine. (*Machine à clou.*)

Milton Chase (co-inventor with Matthew H. Foster), Haverhill, Mass., U.S., 26th July, 1889; 5 years.

Claim.—1st. The feed rolls D, D, provided with beveled edges, in combination with the rollers H, mounted in frames I, wedges J and bolts K, substantially as and for the purposes set forth. 2nd. The rolls F, in combination with the dies Q and rings or collars R for securing them in position, substantially as shown and described. 3rd. The clearers S, and cams T, in combination with rolls provided with dies for cutting nails, substantially as shown and described. 4th. In a nail machine, a pair of feed rolls and side rollers arranged to partly form the head of the nails jointly with the pair of rolls, provided on their perimeter with dies arranged alternately with each other, so that the dies on one roll will fit into the spaces between the dies on the other roll, substantially as shown and described. 5th. The feed rolls D, D, and die rolls F, F, in combination with the worm wheels L, worms M and shaft N, whereby the feed and the die rolls are driven at the same speed, substantially as shown and described. 6th. The brushes U and gears a, b, in combination with the die rolls F, dies Q, and collars R, substantially as and for the purposes set forth. 7th. In combination with the die rolls F and dies Q, a pump or fan W and pipe X for delivering a blast of cold air to the dies, substantially as shown and described. 8th. In a nail machine, a pair of feed rolls, the periphery of which is formed to partly shape nails in a strip of metal passed between them, jointly with the pair of rolls provided with dies to cut and form complete nails from said strip of metal, substantially as set forth.

No. 31,841. Mail Bag Rack and Distributing Table. (*Râtelier de valise à lettres et table de distribution.*)

Stephen Strange, Los Angeles, Cal., U.S., 26th July, 1889; 5 years.

Claim.—1st. In a mail bag rack, bents for sustaining the horizontal rods, consisting of pipe sections secured together by pipe fittings to form a horizontally united series of perpendicular rectangular frames, a series of pipe sections of equal lengths screwed into the fittings on the lower side of such frames to form the legs of the bent, and pipe sections of relatively increasing length screwed into the fittings on the upper side of the frames, and projecting upward therefrom to form supports for the horizontal rods of the rack, and provided with pipe fittings in which such rods may be secured. 2nd. A mail bag rack, comprising the combination of two rack frames fixed parallel to each other, with a narrow unobstructed aisle between them, and one or more running distributing half tables movably mounted upon each rack frame, and projecting therefrom half way across the aisle to form with its opposing half table a complete distributing table, when the opposing tables are made to coincide with each other. 3rd. In a mail bag rack, such as set forth, the combination of two rack frames fixed parallel to each other, with a narrow unobstructed aisle between them, a movable running distributing half table, provided along the back and ends of its upper face with upright guards J, square at the free edge of the table, mounted upon one of such frames and projecting therefrom half way across, such aisle and a like table similarly mounted upon the other frame. 4th. In a mail bag rack, such as set forth, the combination, with the frame of the rack, of the upright bracket arms L, secured to the bents of the rack and projecting therefrom into the aisle, the upper running greater in diameter than the bracket arms, secured upon the top ends of such arms, the lower running rail M, two perpendicular grooved wheels O secured to the under side of the table, near to the rear edge thereof, with their front peripheries on a line parallel to the axis of the table, two vertical anti-friction rollers secured to the under side of the table, with their rear peripheries on a line parallel with the axis of the table, and with a space between the line of the front peripheries of the grooved wheels, and the rear peripheries of the anti-friction rollers approximately equal to the diameter of the upper running rail, a perpendicular support rod secured to the under side of the table, and having at its lower end a grooved castor wheel resting upon the top of the lower running rail, longitudinal braces secured to the lower end of the support rod and to the bottom of the table, and a lateral support brace secured to the support rod and extending therefrom up to the under side of the table. 5th. In a mail bag rack, such as set forth, the combination of the running movable half table secured to the rack by suitable mechanism, and divided longitudinally near the rear edge between such mechanism and the front edge of the table, hinges securing the front and rear sections of the table together, the perpendicular support rod and the lateral support brace U swiveled upon the support rod. 6th. In a mail bag rack, such as set forth, the combination, with the running rails of the rear section I_r, of the table rigidly secured to the running rails by suitable hangers, such hangers, the front section I_f of the table hinged to the rear section, and a swiveled support brace secured to the rear section of the table. 7th. In a mail bag rack, such as set forth, the combination, with the running rail of the rear section I_r, of the running table provided with suitable hanging mechanism, the front section I_f of the running table hinged to the rear section, the perpendicular support rod Q, the T fittings V, V₁ forming journals

around the support rod Q, the collar W and set screw X, the collar Y, the lateral support brace U with the convex head *a* on its upper end, the catch plate Z secured to the table and having its under face beveled at the ends, and having a slight depression *b* in the under face of the catch plate.

No. 31,842. Construction of Electric Circuits. (*Construction des circuits électriques.*)

The American Telephone and Telegraph Company, New York (assignee of John A. Barrett, Brooklyn, N.Y., U.S., 26th July, 1889; 5 years.

Claim.—1st. Three or more substantially parallel metallic electric circuits, the direct and return wires of two or more of which are so divided into sections by crossing at different points, as to be inductively neutral to electrical changes in each of the other circuits. 2nd. A group of parallel metallic circuits, supported on poles, each two circuits immediately adjacent in any direction horizontally, vertically or diagonally, being made inductively neutral to each other, by causing the direct and return wires of one of them to cross or exchange places, in such manner that the average distance of each wire of said crossed circuit from the two wires of the other shall be the same, substantially as described. 3rd. A group of metallic electric circuits,

comprising two parallel circuits reciprocally inductive upon each other, and one or more interposed metallic electric circuits made inductively neutral to said reciprocally inductive circuits, and if more than one to each other, by suitable crossings of their respective wires, substantially as described.

No. 31,843. Road Cart. (*Désobligeante.*)

Culver G. Thyng, Olean (assignee of George Geddes, Fairmount), N.Y., U.S., 26th July, 1889; 5 years.

Claim.—1st. The combination of the shafts *b*, the shackle *q* having journal opening *c*₁ and *c*₂, a pivot-pin or bolt *l*, a stirrup *d* and the spring *S*, substantially as and for the purpose set forth. 2nd. The combination of the shafts *b*, seat supports *f*, *f*, a transverse spring *S*, a stirrup *d* and a shackle *c*, substantially as and for the purpose set forth. 3rd. The combination of the seat *A*, pivoted seat supports *f*, the transverse spring *S*, axle *a*, shaft *b*, shackle *c*, stirrups *d*, substantially as and for the purpose set forth. 4th. The combination, with a shaft *b*, shackle *c*, a pivot bolt *l*, a pendent stirrup *d*, a spring *S* and a detachable foot-rest *C*, substantially as described. 5th. The combination of the seat *A* and cross-bar *g*, lugs *2* and rails *4*, with the foot-rest *C*, bolts or pins *6* and the pins *7*, substantially as and for the purpose set forth.

Errata.—For illustration see page 320.

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

1473. J. S. McCURDY, 2nd 5 years of No. 19,769, from the twelfth day of July, 1889. Improvements in Hames, 6th July, 1889.
1474. W. MORRISON, 3rd 5 years of No. 10,221, from the tenth day of July, 1889. Improvements on Chemical Fire Engines, 6th July, 1889.
1475. C. W. CHENEY and J. W. GOODMAN, 2nd 5 years of No. 19,753, from the seventh day of July, 1889. Improvements in Lawn Mowers, 6th July, 1889.
1476. W. A. SAWYER, 2nd and 3rd 5 years of No. 20,565, from the twelfth day of November, 1889. Improvements in Machines for Measuring the Areas of Surfaces, 6th July, 1889.
1477. G. DURNFORD, 2nd 5 years of No. 19,951, from the fourth day of August, 1889. Improvements on Machines for Reducing Ores, 9th July, 1889.
1478. A. L. KANE, 2nd 5 years of No. 19,985, from the fifteenth day of August, 1889. Improvements in Feed Boxes for Horses, 9th July, 1889.
1479. J. W. JACOBS, 2nd 5 years of No. 19,931, from the second day of August, 1889. Improvements in Washing Machines, 10th July, 1889.
1480. THE PRADDEX AMERICAN EGG CO. (assignee) 2nd 5 years of No. 19,780, from the twelfth day of July, 1889. Improvements in Processes for Preserving Eggs, 10th July, 1889.
1481. M. C. and S. A. EVERTS, 3rd 5 years of No. 10,227, from the eleventh day of July, 1889. Improvements in Machines for Hulling Buckwheat, 10th July, 1889.
1482. THE CHAMBERLIN CARTRIDGE CO. (assignee) 2nd 5 years of No. 19,786, from the fourteenth day of July, 1889. Improvements on Cartridge Loading Machines, 11th July, 1889.
1483. THE PNEUMATIC CO. (assignee) 2nd 5 years of No. 19,916, from the second day of August, 1889. Improvements in Machinery for Tamping or Ramming Moulds for Castings, 11th July, 1889.
1484. L. S. STRUMBERT, (assignee) 2nd 5 years of No. 19,765, from the twelfth day of July, 1889. Improvements in Pumps, 11th July, 1889.
1485. J. B. HARRIS, (assignee) 3rd 5 years of No. 10,264, from the twenty-first day of July, 1889. Improvements on Card Cutters, 12th July, 1889.
1486. E. S. PLATT, 2nd 5 years of No. 19,767, from the twelfth day of July, 1889. Improvements in Horse Collar Fasteners, 12th July, 1889.
1487. J. B. ARMSTRONG, 2nd 5 years of No. 19,963, from the ninth day of August, 1889. Improvements in the Method and Process of Welding Steel and Iron, 12th July, 1889.
1488. J. WALKER, 2nd 5 years of No. 19,878, from the first day of August, 1889. Improvements in Pumps for Oil Wells, 13th July, 1889.
1489. THE CASE MANUFACTURING CO. (assignee) 2nd 5 years of No. 20,246, from the twenty-first day of September, 1889. Improvements on Reduction Machines (No. 2), 15th July, 1889.
1490. THE CASE MANUFACTURING CO. (assignee) 2nd 5 years of No. 20,247, from the twenty-first day of September, 1889. Improvements in Casings for Roller Mills, 15th July, 1889.
1491. THE CASE MANUFACTURING CO. (assignee) 2nd 5 years of No. 20,248, from the twenty-first day of September, 1889. Improvements on Feed Boxes for Roller Mills, (No. 2), 15th July, 1889.
1492. THE CASE MANUFACTURING CO. (assignee) 2nd 5 years of No. 20,249, from the twenty-first day of September, 1889. Improvements on Feed Boxes for Roller Mills, (No. 1), 15th July, 1889.
1493. THE CASE MANUFACTURING CO. (assignee) 2nd 5 years of No. 20,251, from the twenty-first day of September, 1889. Improvements on Adjusting and Levelling Devices for Roller Mills, 15th July, 1889.
1494. THE CASE MANUFACTURING CO. (assignee) 2nd 5 years of No. 20,320, from the first day of October, 1889. Improvements on Reduction Machines, 15th July, 1889.
1495. W. DICKINSON, 2nd 5 years of No. 20,047, from the twentieth day of August, 1889. Improvements in Combined Seeding and Cultivating Machines, 15th July, 1889.
1496. T. HODGSON, 2nd 5 years of No. 19,987, from the second day of August, 1889. Improvements in Shingle Machines, 15th July, 1889.
1497. E. H. RUSSELL, 2nd and 3rd 5 years of No. 19,822, from the seventeenth day of July, 1889. Improvements in the Process of Purifying Soda Ash, 17th July, 1889.
1498. F. HAWLEY, 2nd and 3rd 5 years of No. 19,853, from the nineteenth day of July, 1889. Improvements in Band Cutters and Feeders, 17th July, 1889.
1499. R. PORTER, 2nd 5 years of No. 19,992, from the fifteenth day of August, 1889. Improvements in Horse Collars, 17th July, 1889.
1500. J. A. MATHIEU, 2nd 5 years of No. 19,869, from the thirtieth day of July, 1889. Improvements in Furnaces for Distilling and Carbonizing Wood, etc., 18th July, 1889.
1502. J. S. KEMP, 2nd 5 years of No. 19,883, from the first day of August, 1889. Improvements in Fertilizer Distributors, 22nd July, 1889.
1503. T. J. BRINSMEAD, 2nd 5 years of No. 20,524, from the seventh day of November, 1889. Improvements in Attaching the Springs to the Wrist Pins or Lining pins of Pianofortes, 29th July, 1889.
1504. W. S. BULST, 2nd 5 years of No. 19,937, from the second day of August, 1889. Improvements in Railway Snow Ploughs, 29th July, 1889.
1505. T. HEAD, 2nd 5 years of No. 18,868, from the thirtieth day of July, 1889. Composition of Matter for Roofs, 29th July, 1889.
1506. W. G. RICKER, 2nd 5 years of No. 19,873, from the first day of August, 1889. Improvements in Hay Carriers, 29th July, 1889.
1507. W. A. HARDY, 2nd 5 years of No. 19,915, from the second day of August, 1889. Improvements in Car Axle Boxes, 31st July, 1889.
1508. H. GLINES, 2nd 5 years of No. 20,032, from the nineteenth day of August, 1889. Improvements in Devices for Stretching Shoes, 31st July, 1889.
1509. THE ENGLISH AND CANADIAN WIRE FASTENING CO. (assignee) 2nd 5 years of No. 19,962, from the ninth day of August, 1889. Improvements in Machines for Uniting the Uppers and Soles of Boots, etc., 31st July, 1889.

JULY LIST OF TRADE MARKS.

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3491. THE HIRAM HOLT COMPANY, of East Wilton, Franklin County, State of Maine, U.S.A. Hay Knives, 4th July, 1889.
3492. S. L. ALLEN and COMPANY, of Philadelphia, Pennsylvania, U.S.A. Agricultural Implements, 10th July, 1889.
3493. } GEORGE A. MACBETH and COMPANY, Pittsburgh,
3494. } Pennsylvania, U.S.A.
3495. } Lamp Chimneys, 12th July, 1889.
3496. H. E. FALK, of 65 South John St., Liverpool, Lancashire, England. Substances used as Food, or as Ingredients in Food, including Salt, 15th July, 1889.
3497. HENRY EDWARD ASPINALL, of New Cross, London, England. Enamel in the Nature of Paint, 15th July, 1889.
3498. CROSSE and BLACKWELL, No. 21 Soho Square, London, England. General Trade Mark, 15th July, 1889.
3499. JOHN TOBIN and COMPANY, of Halifax, N.S. Rum, 22nd July, 1889.
3500. LOUIS OVIDE GROTHE, of Montreal, Que. Cigars, 22nd July, 1889.
3501. WILLIAM ROBERTSON, of Toronto, Ont. General Trade Mark, 23rd July, 1889.
3502. E. H. KELLOGG and COMPANY, of New York, U.S.A. Lubricants, 24th July, 1889.
3503. ABRAHAM BRAHADI, of Montreal, Que. Caps, 29th July, 1889.
3504. GEORGES HENRI BERAUD and GUSTAVE ADOLPHE CANNOT, of 20 Bucklebury, London. Peat Fibre, 30th July, 1889.
3505. SIBREE CLARKE, of Kamloops, B.C. Medicinal Preparation, 31st July, 1889.
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4946. FROTHINGHAM and WORKMAN, MONTREAL, PRICE LIST, 1889. Frothingham & Workman, Montreal, Que., 6th July, 1889.
4947. THE LUCK OF THE HOUSE. A Novel. By Adeline Sergeant. John Lovell & Son, Montreal, Que., 11th July, 1889.
4948. DILLON'S MILK BOOK AND LEDGER COMBINED. Thos. J. Dillon, Bluevale, Co. Huron, Ont., 11th July, 1889.
4949. BUST OF HIS GRACE THE LATE ARCHBISHOP LYNCH, OF TORONTO. John Kelley, Toronto, Ont., 15th July, 1889.
4950. AYER'S BOOK OF EMERGENCIES. Dr. J. C. Ayer & Co., Montreal, Que., 15th July, 1889.
4951. THE SONG THAT REACHED MY HEART. Words and Music by Julian Jordan, and arranged in the key of E flat by Walter Linnell. I. Suckling & Sons, Toronto, Ont., 16th July, 1889.
4952. ENGLISH LITERATURE for 1890. Selections from Byron and Addison. Notes by Strang and Moore. The Copp, Clark Co. (L'd.), Toronto, Ont., 16th July, 1889.
4953. DIVINE GUIDANCE, OR THE HOLY GUEST. By Rev. Nelson Burns, B. A. Thos. S. Linscott, Brantford, Ont., 17th July, 1889.
4954. A LITTLE FOOL. A Novel. By John Strange Winter. The National Publishing Co., Toronto, Ont., 18th July, 1889.
4955. HIGH SCHOOL ZOOLOGY. By Ramsay Wright. The Copp., Clark Co. (L'd.), Toronto, Ont., 18th July, 1889.
4956. OUTLINE PLAN OF THE TOWN OF WINDSOR AND PART OF THE TOWNSHIP OF SANDWICH, WEST, COUNTY OF ESSEX, ONTARIO. George McPhillips, Windsor, Ont., 18th July, 1889.
4957. GOLD FROM OPHIR. A new book of Bible Readings, original and selected, by J. E. WOLFE. Archer Green Watson, Manager Toronto Willard Tract Depository Limited, Toronto, Ont., 18th July, 1889.
4958. CODE DE PROCEDURE CIVILE DE LA PROVINCE DE QUEBEC. Par Leon Lorrain. Amedée Periard, Montreal, Que., 19 Juillet, 1889.
4959. THUNDER AND LIGHTNING WALTZ. By E. Corlett. Willimott Henry Billing, Toronto, Ont., 20th July, 1889.
4960. HALIFAX CARNIVAL ECHO, 1889. Wm. R. Dunn, Halifax, N. S., 22nd July, 1889.
4961. THE ROMANCE OF AN ALTER EGO. By Lloyd Bryce. Rose Publishing Co., Toronto, Ont., 22nd July, 1889.
4962. SOPHY CARMINE. By John Strange Winter. John Lovell & Son, Montreal, Que., 23rd July, 1889.
4963. NOCTURNE IN E FLAT. By M. Edna Bigelow, Toronto, Ont., 23rd July, 1889.
4964. THE EXPLORATIONS OF JONATHAN OLDBUCK, F.G.S.Q., IN EASTERN LATITUDES. By James Macpherson, LeMoine, St. Colomb de Sillery, Que., 24th July, 1889.
4965. THE FLAG THAT BEARS THE MAPLE LEAF. Words by A. W. Dingman. Music by J. D. Kerrison. I. Suckling & Sons, Toronto, Ont., 25th July, 1889.
4966. NOTICES BIOGRAPHIQUES—LES EVEQUES DE OUEBEC. Par Monseigneur Henri Tétu. Narcisse S. Hardy, Quebec, 25 Juillet, 1889.
4967. DISTRESS AND INTER-COMMUNICATION FLASHING SIGNALS, (International), for use on sea and coast at night. By Joseph Wall, 13 Claremont Road, Seaforth, Liverpool, England, 26th July, 1889.
4968. HOW PLANTS GROW AND FERN FLORA IN CANADA. By Gray and Lawson. A. & W. Mackinlay, Halifax, N.S., 26th July, 1889.
4969. Photograph of the late HON. JOHN NORQUAY. Rosetta E. Carr, Winnipeg, Man., 30th July, 1889.
4970. THE SCHOOL FERN FLORA OF CANADA. By Prof. Geo. Lawson. A. & W. Mackinlay, Halifax, N.S., 30th July, 1889.
4971. HISTORICAL AND SPORTING NOTES ON QUEBEC AND ITS ENVIRONS. By J. M. LeMoine, St. Colomb de Sillery, Que., 30th July, 1889.
4972. FAMILY EXCURSION SHOPPING CARD. Albert A. Root, Ottawa, Ont., 31st July, 1889.

THE
CANADIAN PATENT OFFICE RECORD

ILLUSTRATIONS.

Vol. XVII.

JULY, 1889.

No. 7

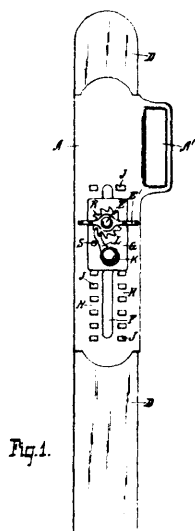
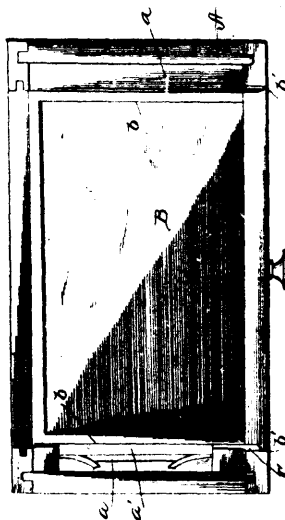
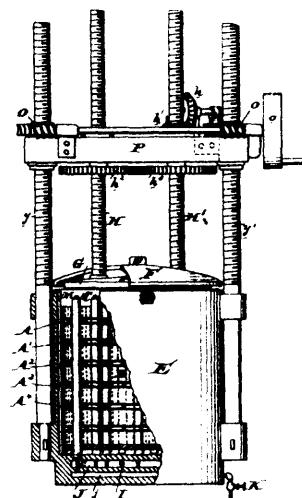


Fig. 1.

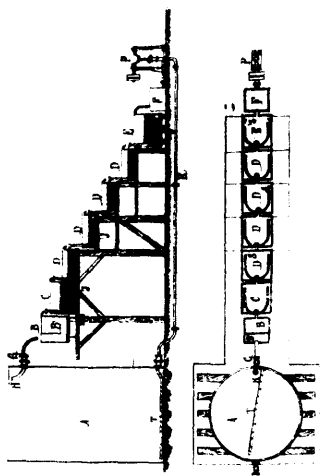
31695 Kendray's Tug Strap Holder for Looms.



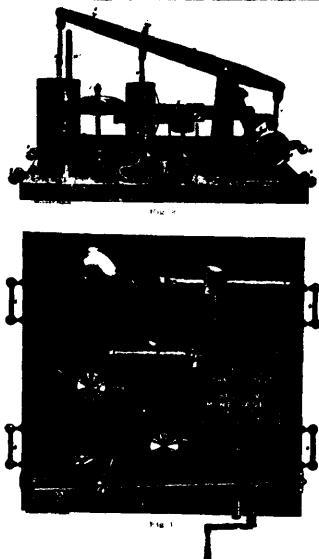
31696 Clapp's Bureau.



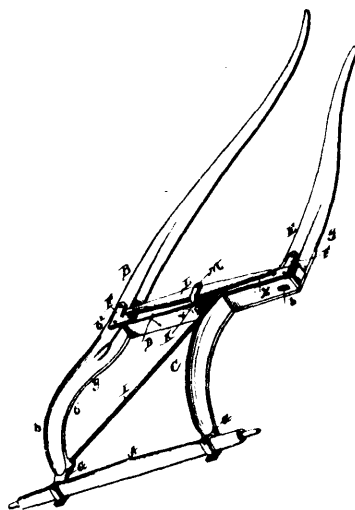
31697 Houseman & Sprowles' Apparatus for the Desiccation of materials.



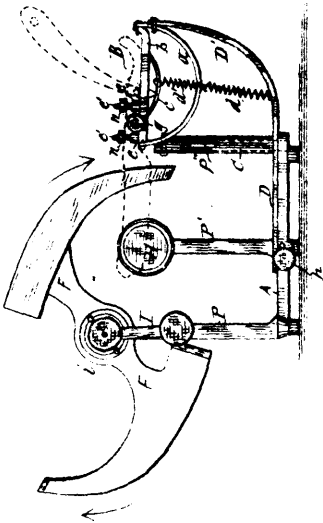
31698 Ruffin's Process for Purifying Crude Spirit, etc.



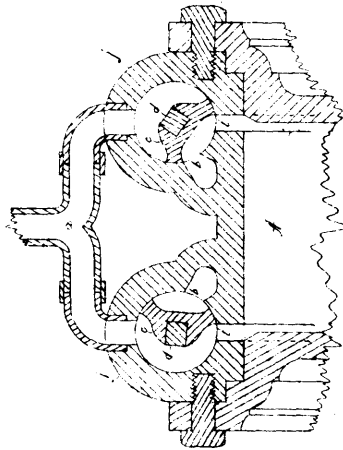
31699 Shaw's Apparatus for Testing Mine Gases.



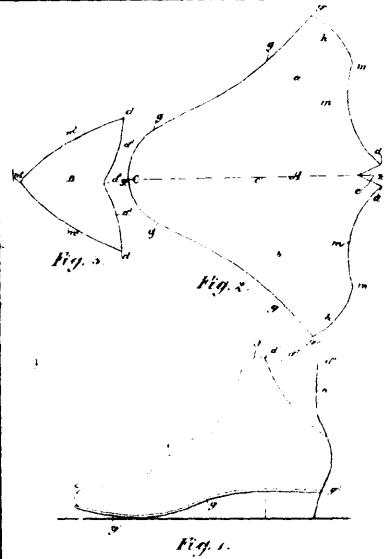
31700 Hagan's Thill.



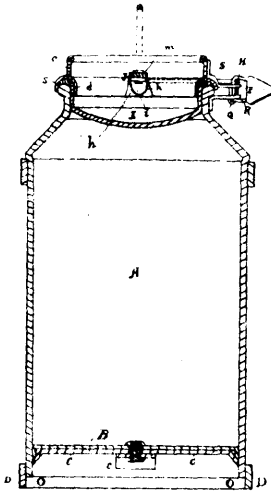
31701 Dey's Razor Sharpening Machine.



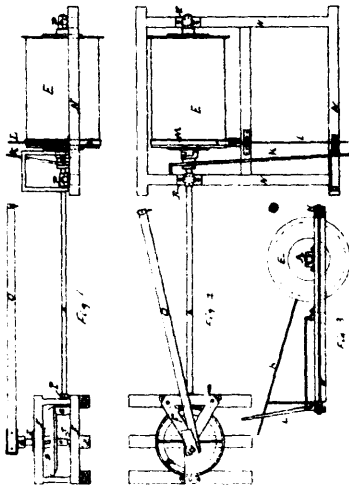
31702 McNaughton's Steam Engine.



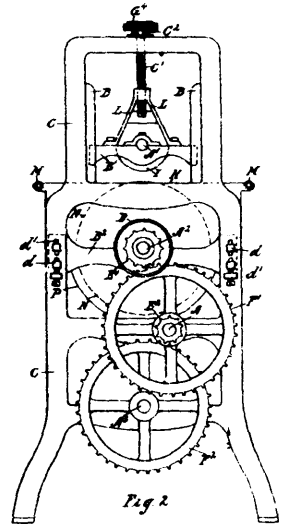
31703 Pettier's Boot and Shoe.



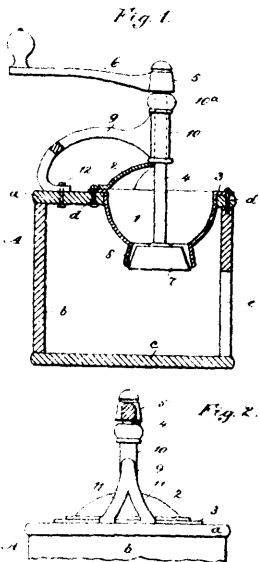
31704 Schwarz's Milk Can.



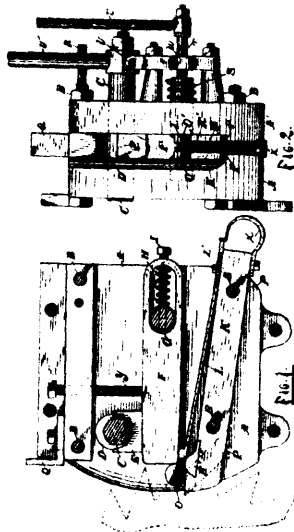
31705 Downend's Hoisting Machine.



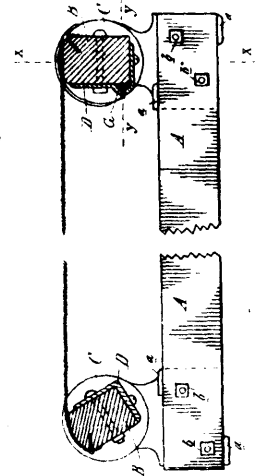
31706 Spoor's Sand Papering Machine.



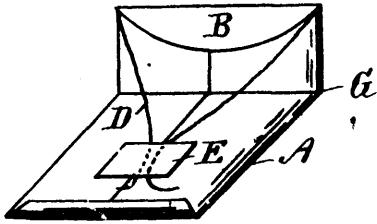
31707 Waddel's Coffee Mill.



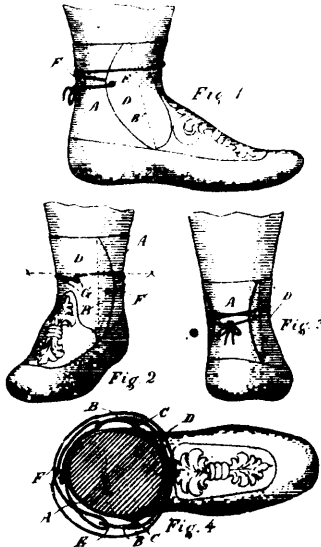
31708 Rhodes' Saw Swinging Machine.



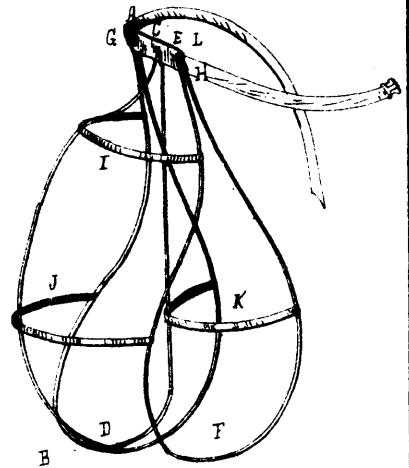
31709 Trilphagen's Corner Iron and Tightening Device for Wire Mattresses.



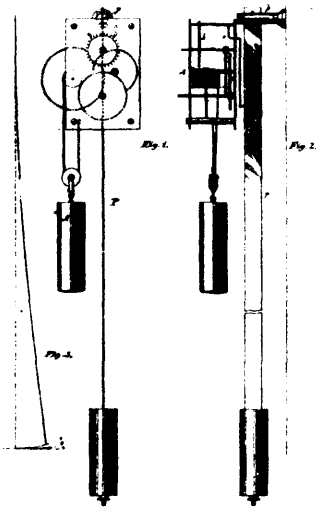
31710 Eysenbach's Display Envelope.



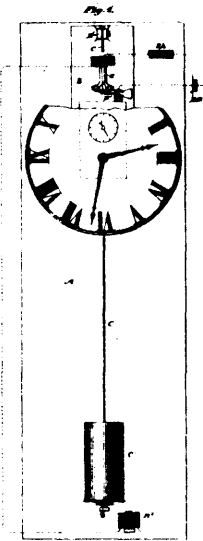
31711 Durocher's Mocassin Boot Fastening.



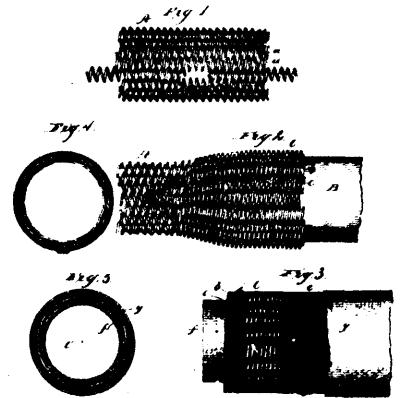
31712 Campbell's Bustle.



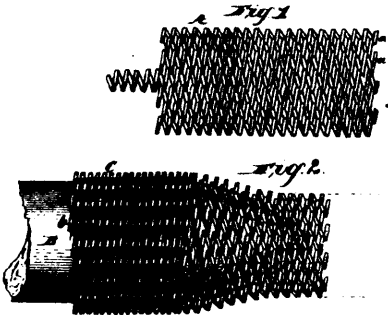
31713 Parcelle's Clock.



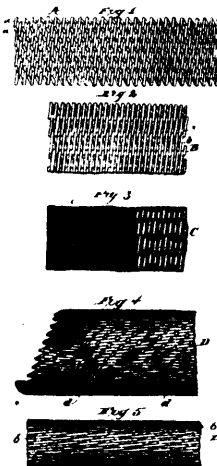
31714 Parcelle's Electric Clock.



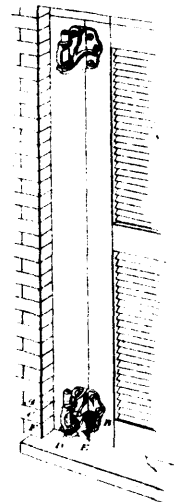
31715 Emerson & Midgley's Hose or Tubing.



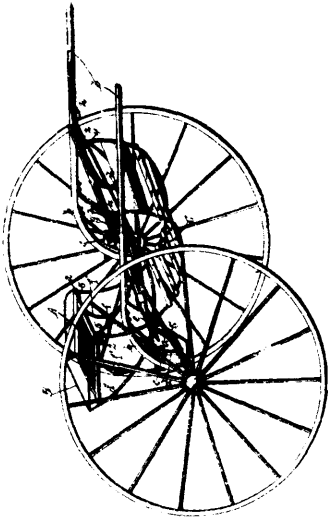
31716 Midgley's Hose or Tubing.



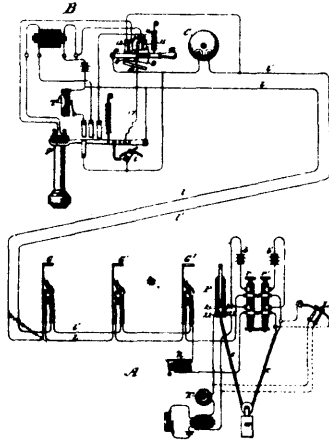
31717 Midgley's Method of Manufacturing Belting.



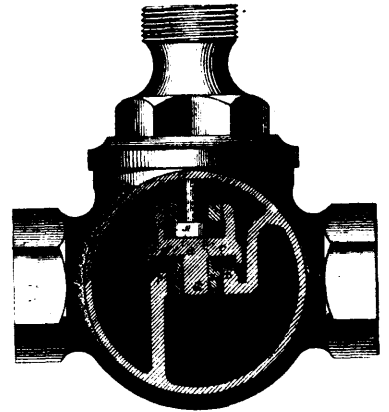
31718 Moore's Grain Scourer, etc.



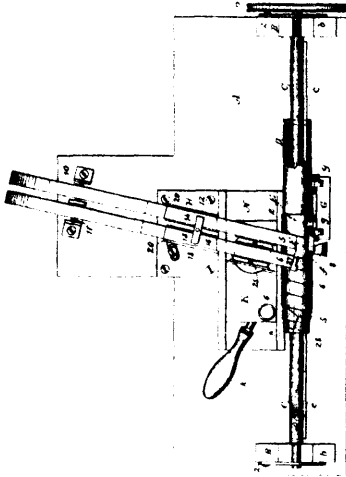
31843 Geddes' Road Cart



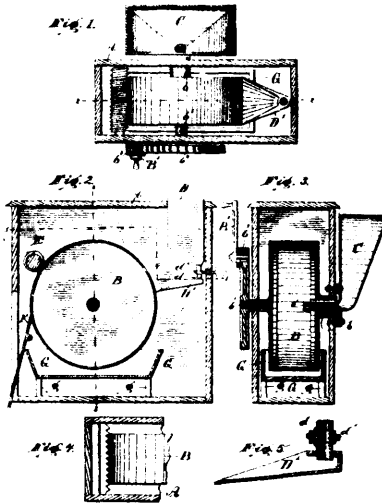
31720 Vail & Seely's Telephone Exchange Signalling.



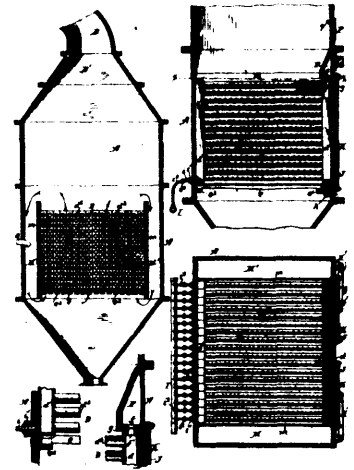
31721 Jenkin's Packing Holder.



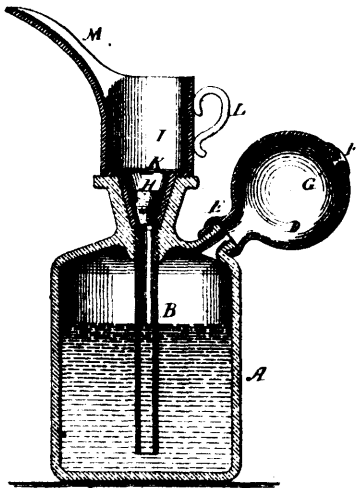
31722 Tainter's Machine for Making Paper Tubes.



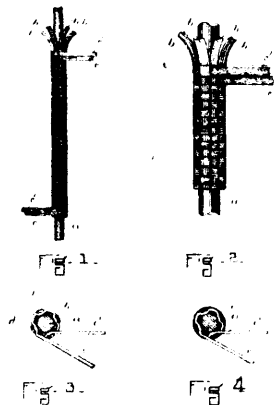
31723 Railsback's Machine for Making Ices, etc.



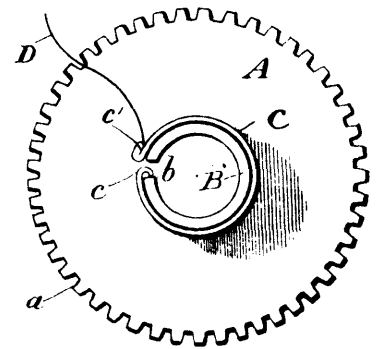
31724 Duncan's Evaporating Pan.



31725 Mohr's Measuring Apparatus for Liquids.



31726 Brook's Electric Conductor.



31727 Ray's Inking Ribbon Spool for Type Writers.

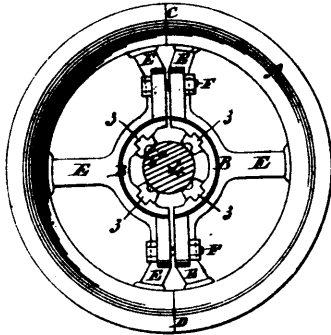
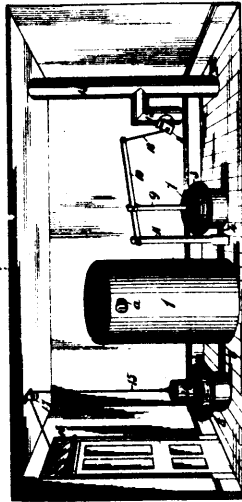


Fig. 1.

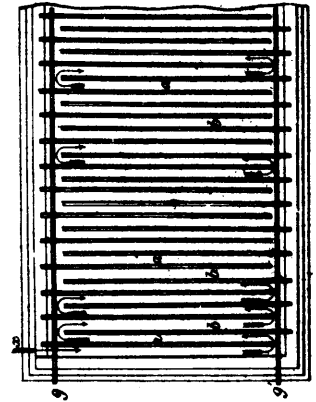
31728

Brockett's Pulley.



31729

Bowes' Air Motor.



31730

Webster's Treatment of Sewage, etc.

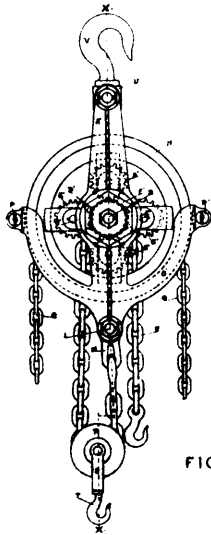
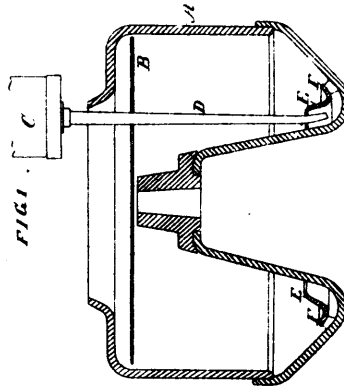


FIG. 1.

31731

Lavery's Gearing for Holsting, etc.



31732

Jonsson's Method of Supplying New Milk to Separating Machines.

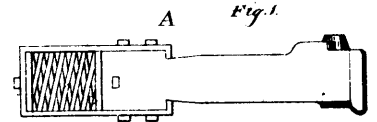


Fig. 1.

31733

Lapplin's Draw-Head for Railway Cars.

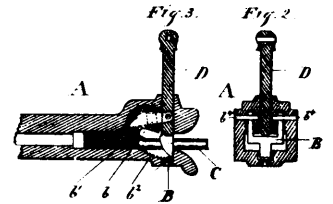


Fig. 3.

Fig. 2.

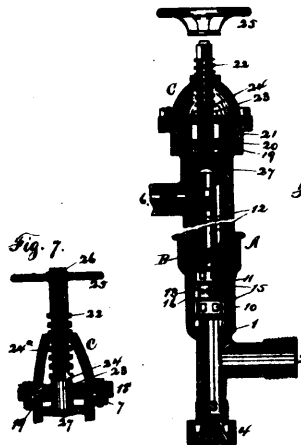
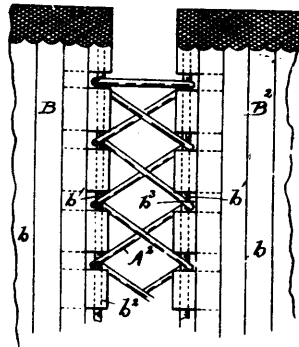


Fig. 2.

Fig. 7.

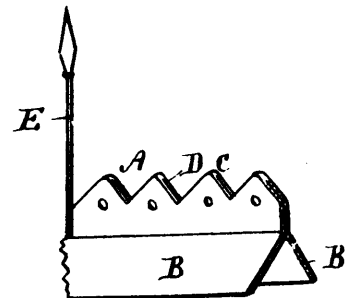
31734

Kaiser's Hydrant.



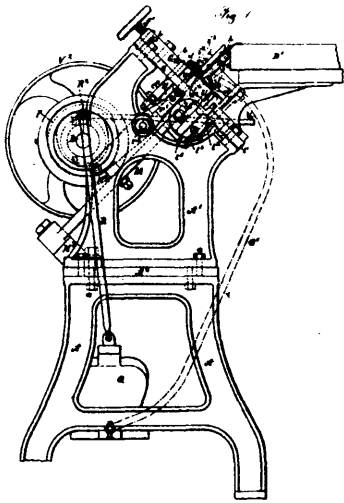
31738

Bortree's Corset.

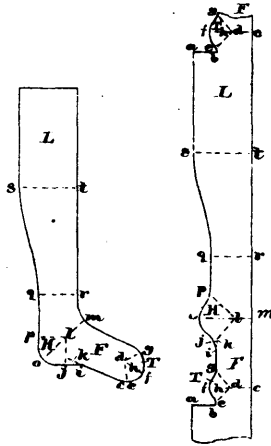


31737

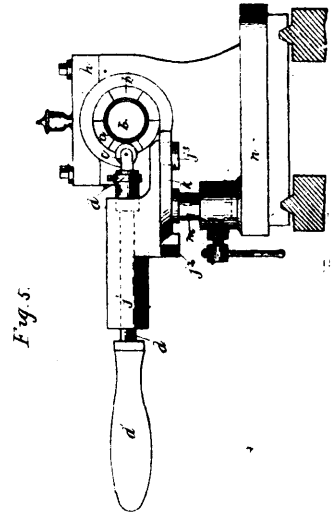
Nelson's Lightning Rod.



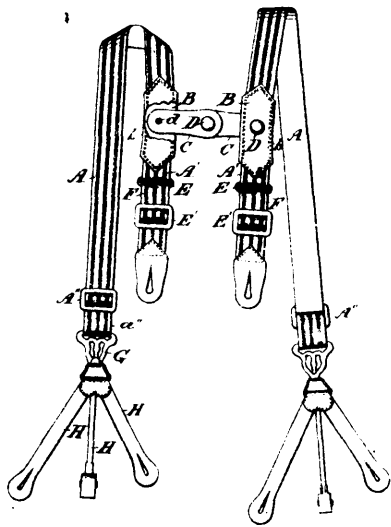
31738 Eaton & Birch's Machinery for Rubbing Types.



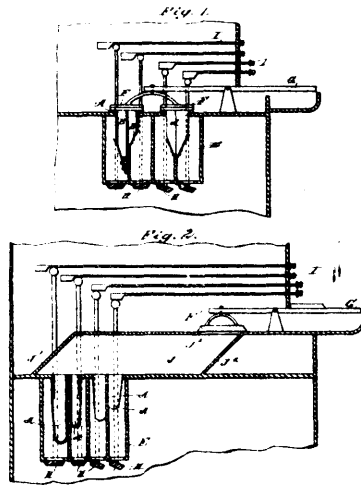
31739 Esty's Art of Knitting Stockings.



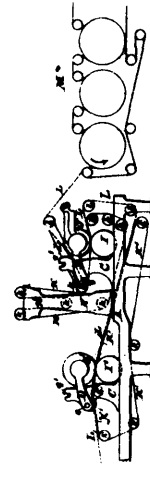
31740 Hofman's Means for Ornamenting Watch Case Centres, etc.



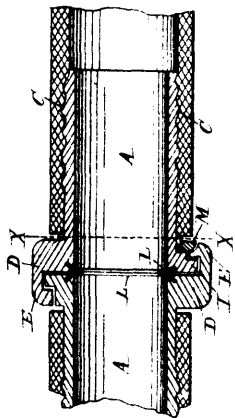
31741 Atwood's Suspender.



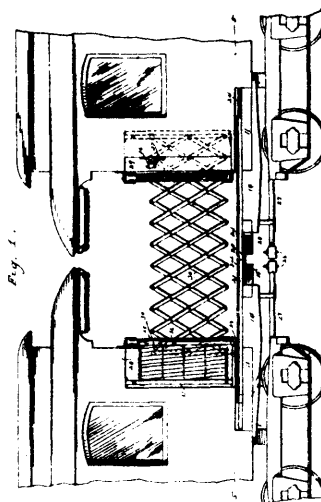
31742 Janes' Organ.



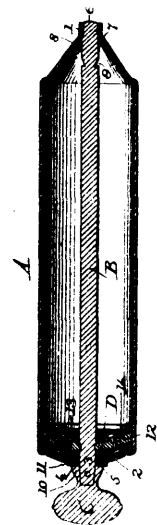
31743 Hazard's Paper Machine.



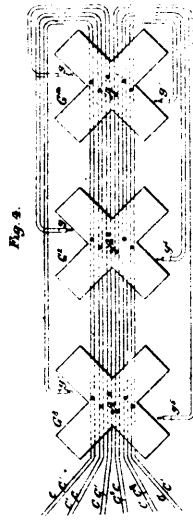
31744 Pearce & Merrill's Hose Coupling.



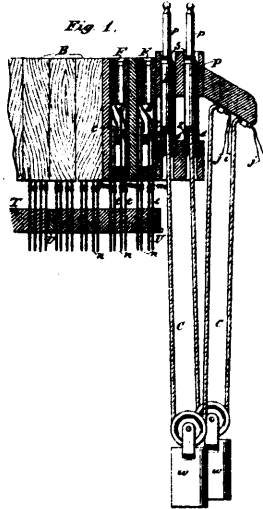
31745 Fuller's Railway Coach.



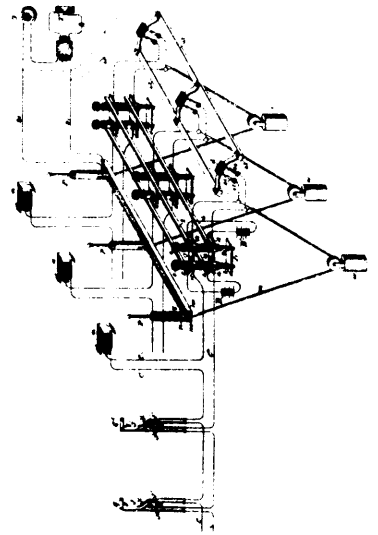
31746 Pitney's Syringe for Fire Extinguishers



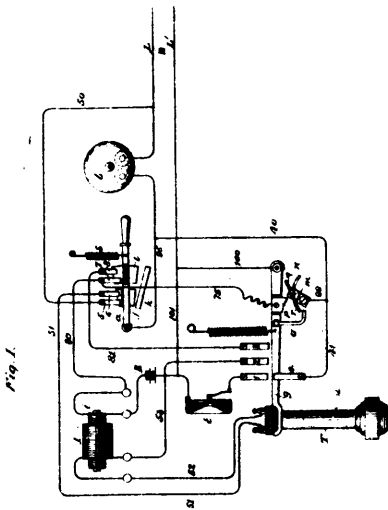
31747 Vall & Seely's Telephone Central Station Apparatus.



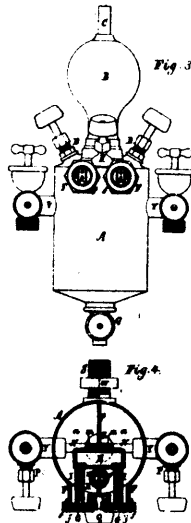
31748 Vall & Seely's Telephone Central Station Apparatus.



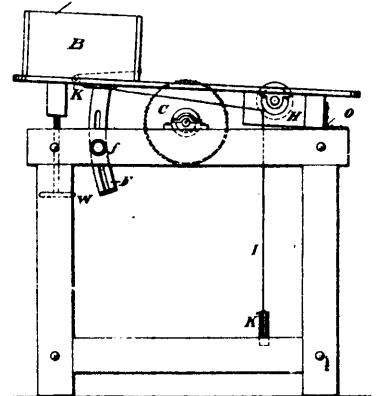
31749 Vall & Seely's Telephone Central Station Apparatus.



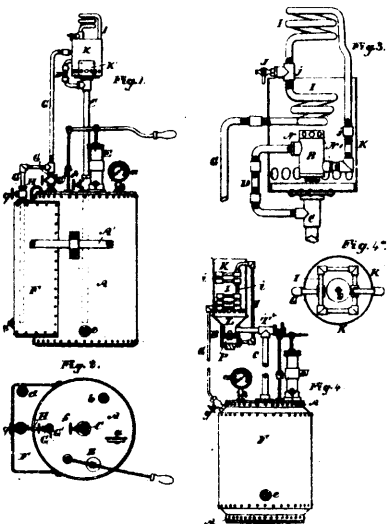
31750 Vall & Seely's Telephone Substation Apparatus.



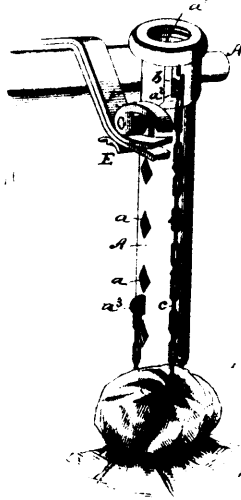
31751 Craig's Lubricator for Locomotive Engines.



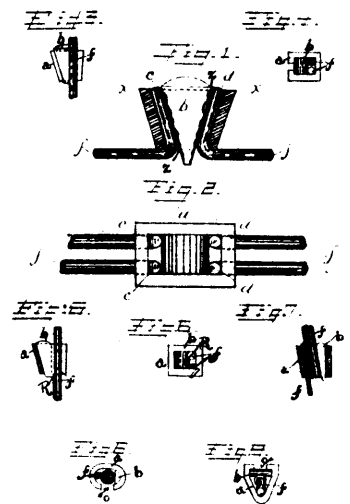
31752 Sullivan's Book Binding.



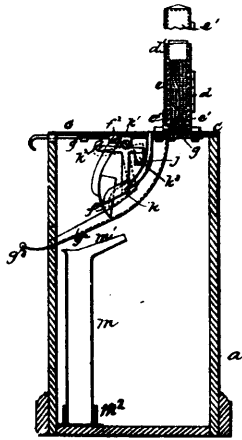
31753 Rose's Oil Spray Lamp.



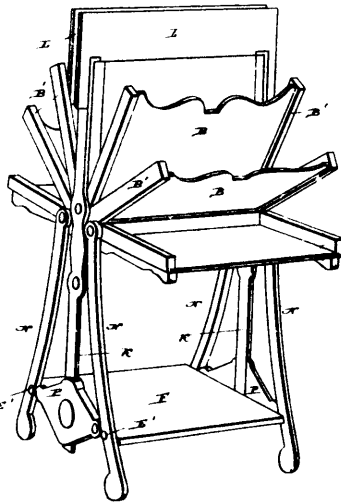
31755 Martin & Palmer's Whip, Robe Lock and Line Holder.



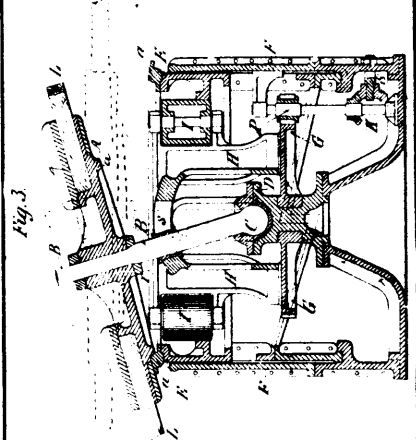
31756 Bainbridge's Wire Coupling.



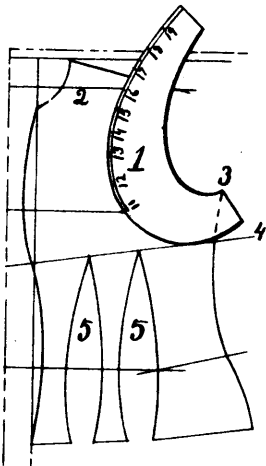
31768 Clifford's Apparatus for Receiving Coin, etc.



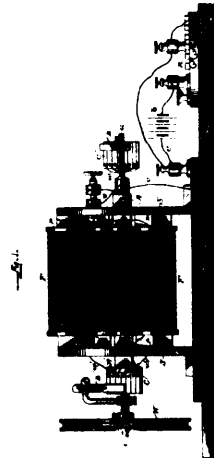
31759 Edwards' Portfolio.



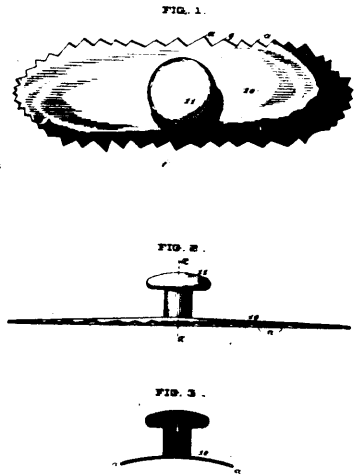
31760 Lidster's Roundabout.



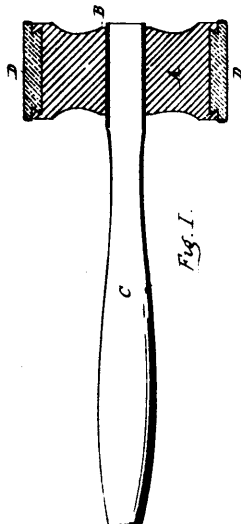
31761 Stockman's Dress Cutter's Rule.



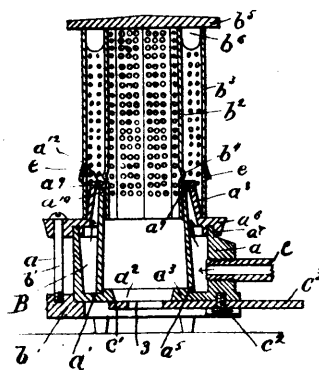
31762 Lugo's Electric Motor, etc.



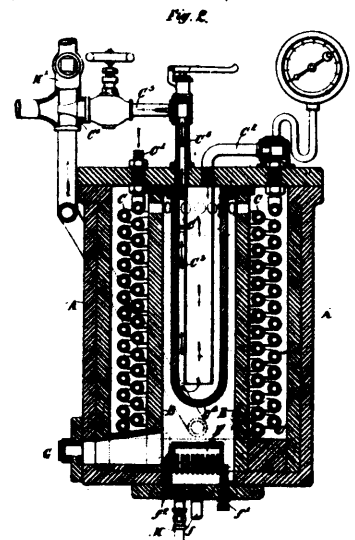
31763 Cridge's Implement for Separating Checks, etc., from their Stubs.



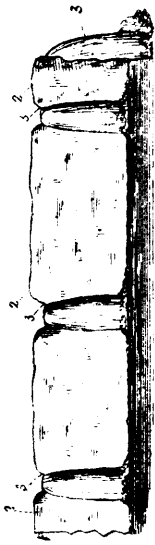
31764 Runnal's Mallet.



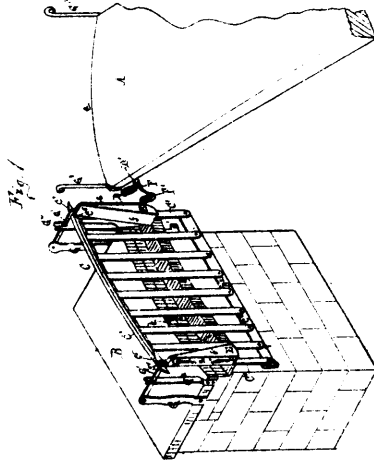
31765 Carsley's Burner.



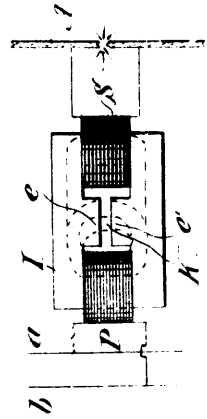
31766 Bourne's Apparatus for Obtaining Motive Force, etc.



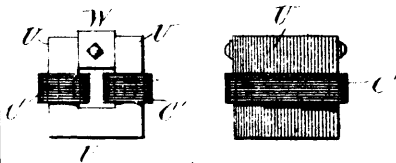
31768 Long's Means for Obtaining Water Power



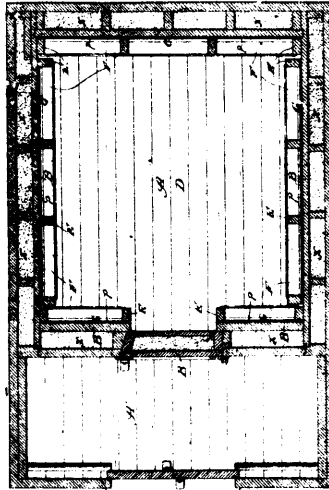
31769 Peirce's Draw Bridge Gate.



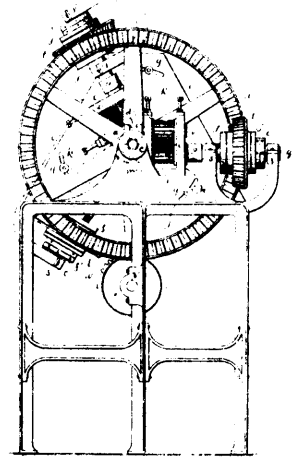
31770 Thomson's Method of Regulating Current in Secondary of Transformers.



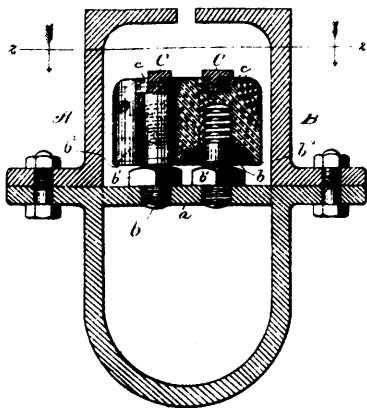
31771 Thomson's Induction Coil, etc.



31772 Swettisch's Refrigerator.



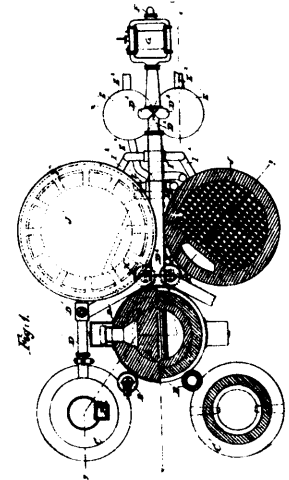
31773 Williams' Machine for Boiling Wire.



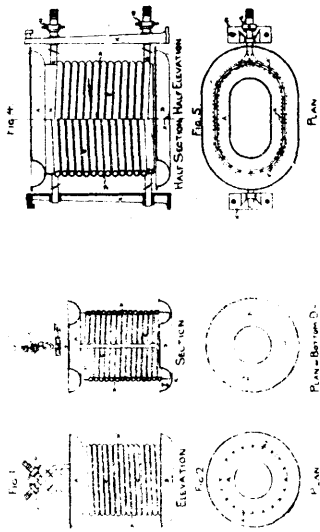
31774 Trott's Conduit for Electric Railways.



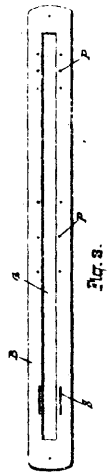
31775 Culloch's Sash Weight.



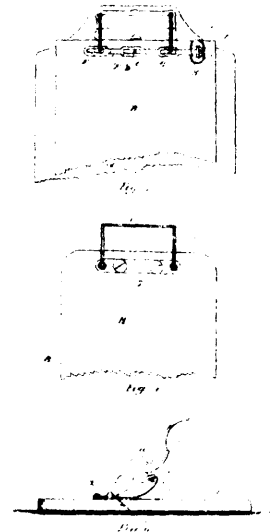
31776 Westman's Process of Reducing Iron Ore.



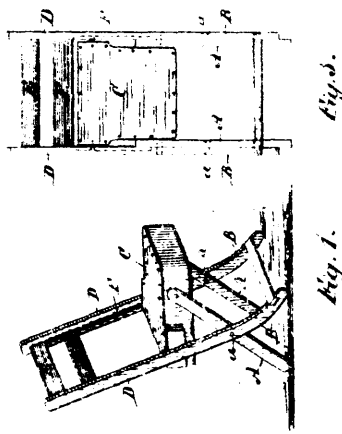
31777 Watson's Machine for Warming Milk, etc.



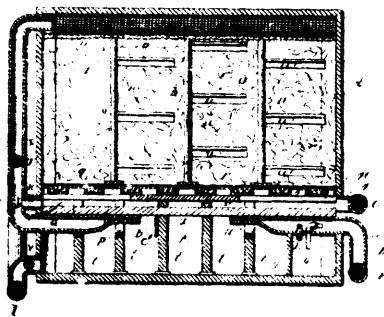
31778 Mackay's Dress Stay.



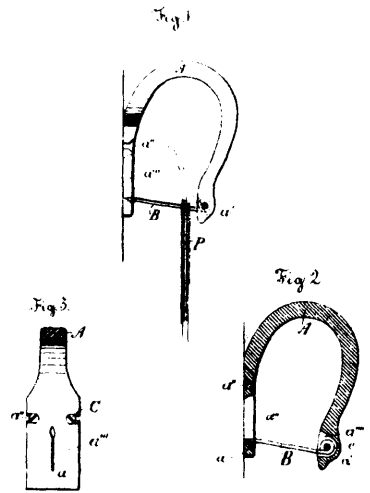
31779 Lepage's Fyle for Papers.



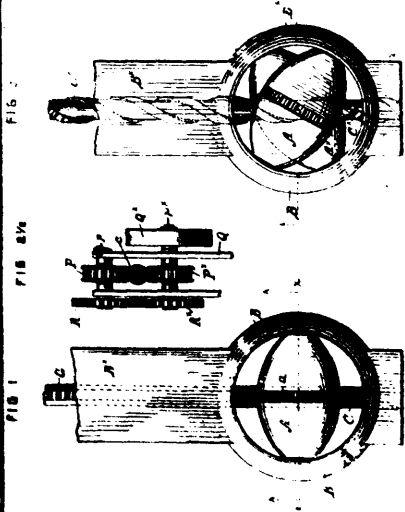
31780 Shirreff's Folding Chair, etc.



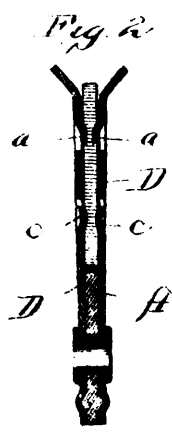
31781 Davis' Means for Purifying Water



31782 Fournier's Paper File.



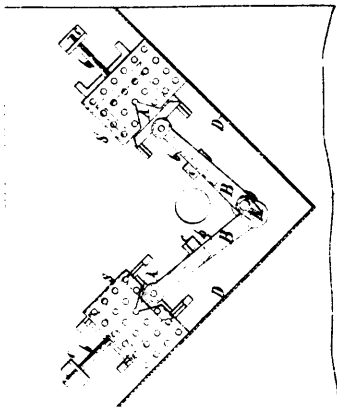
31783 Tasker's Roller Mandrel.



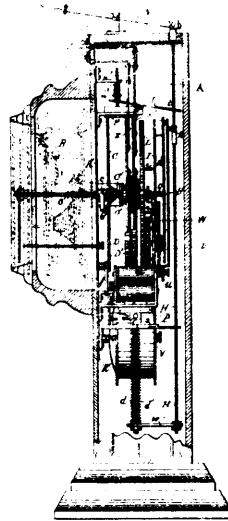
31784 Bartlett's Pencil Sharpener.



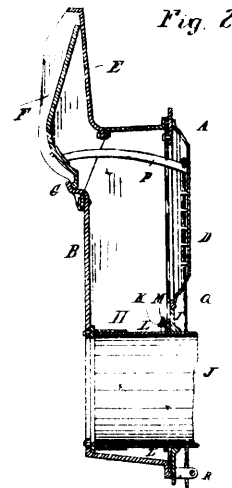
31785 Griffin's Expansible Mandrel.



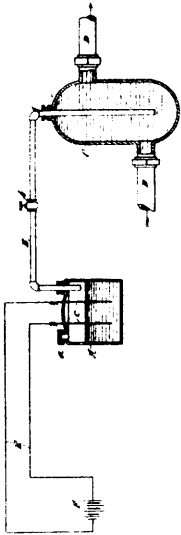
31786 Hearne's Gas Meter.



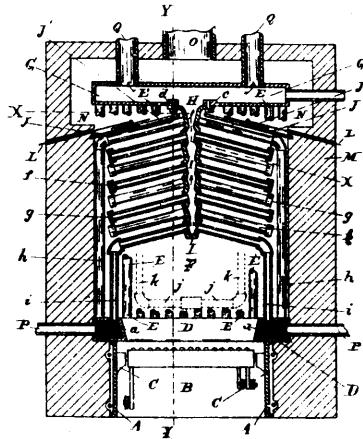
31787 Dey's Time Recorder.



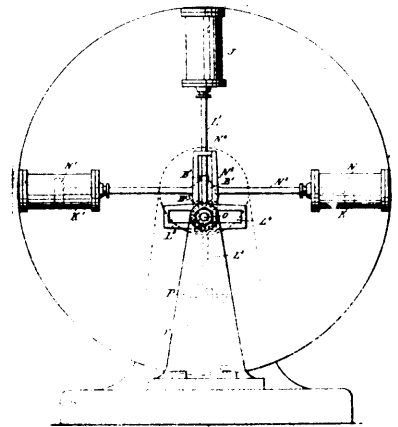
31788 Ekstrom's Wall Ventilator, etc.



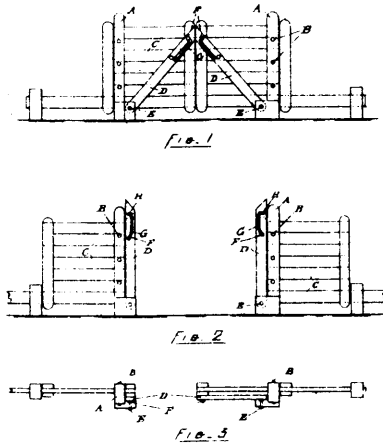
31789 Leeds' Apparatus for Purifying Water.



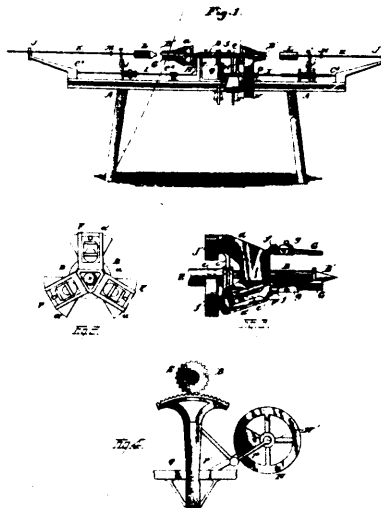
31790 Jewett's Water Heater.



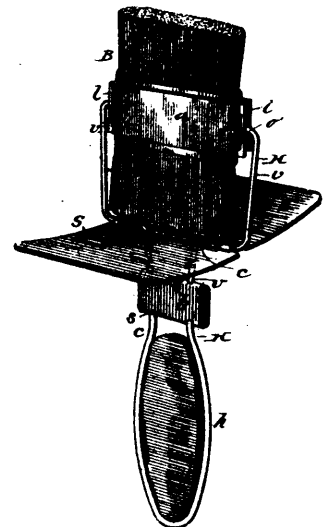
31791 Farmer's Rotary Engine.



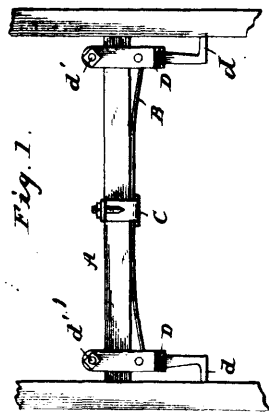
31792 Goddard's Gate, Brace and Lock.



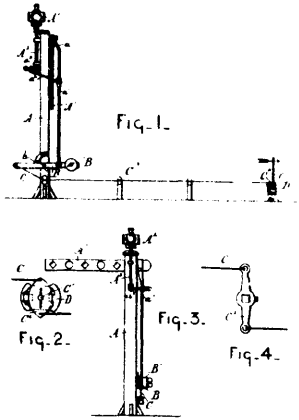
31793 Semple & Brady's Machine for Finishing Necks of Bottles.



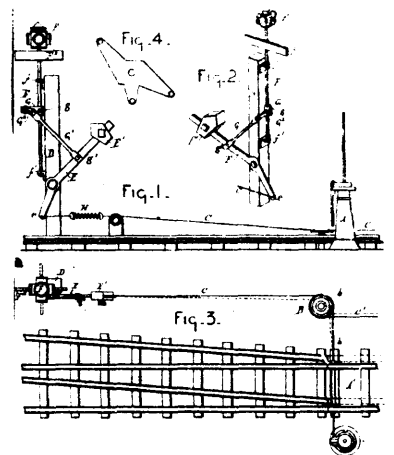
31794 Gorbell's Brush.



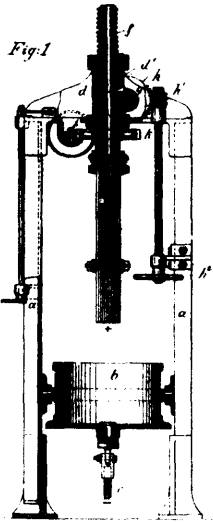
31785 Willey's Whiffletree.



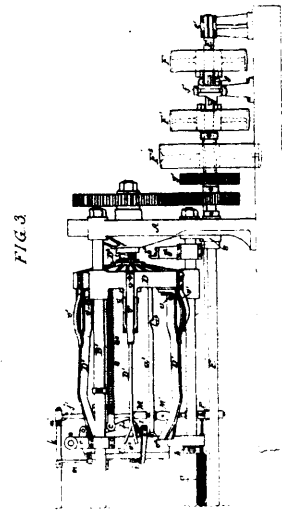
31786 Barnes' Semaphore Signalling Apparatus.



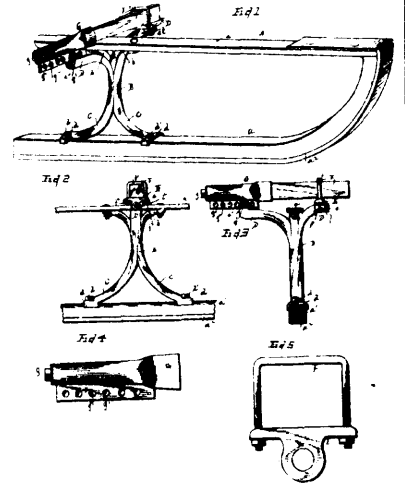
31787 Barnes' Semaphore Signalling Apparatus.



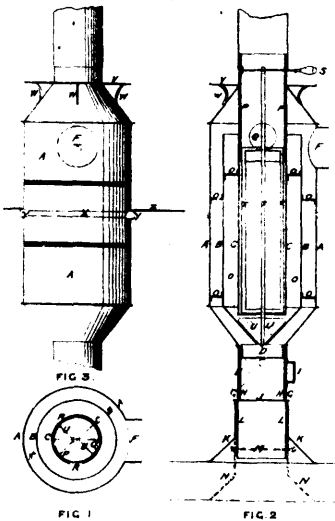
31788 Kilian's Means for Electrolysis of Substances.



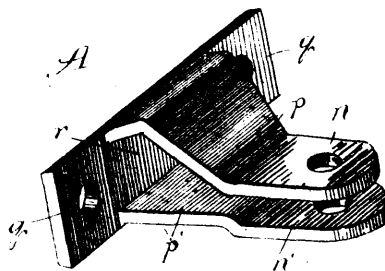
31799 Behfuss' Barrel Making Machine.



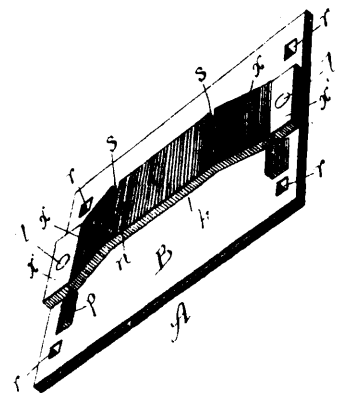
31800 Van Gorden's Attachable Runner.



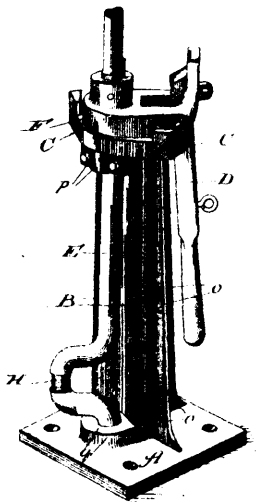
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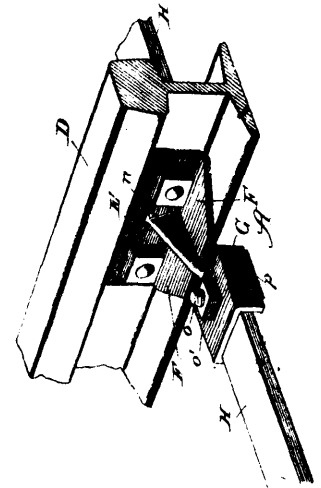
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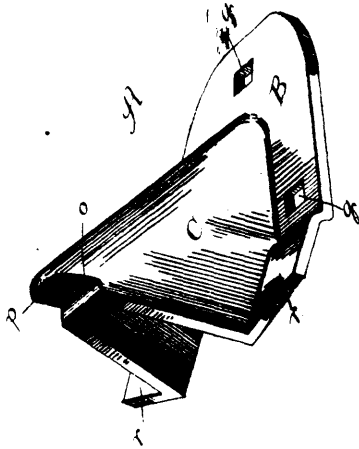
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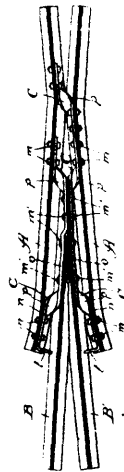
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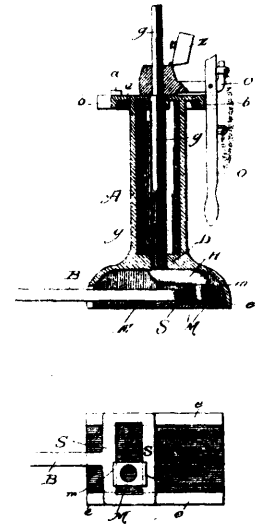
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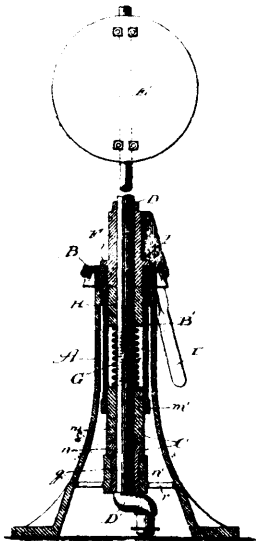
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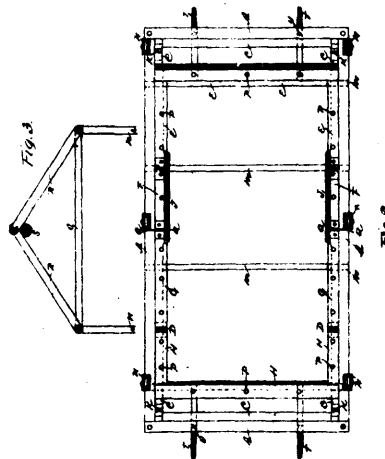
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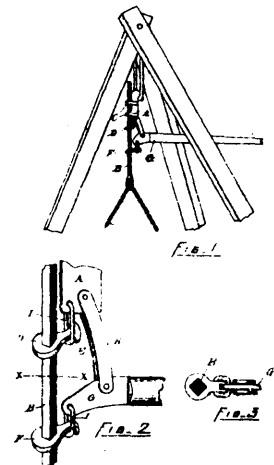
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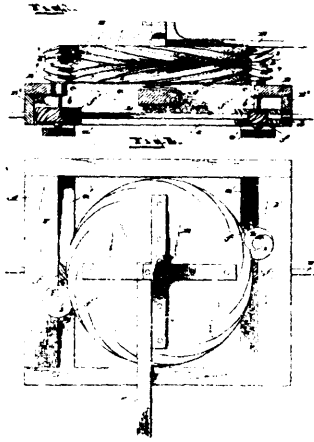
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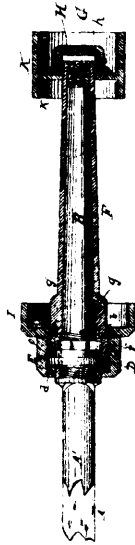
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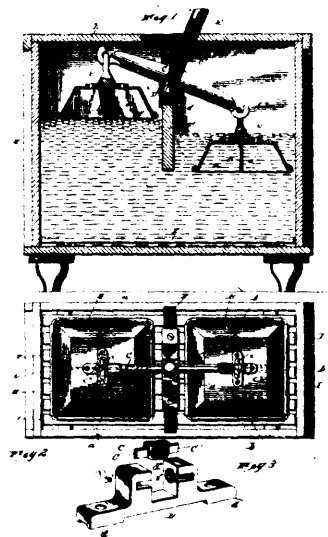
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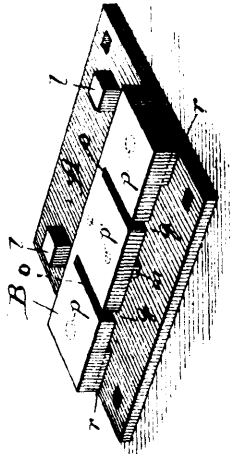
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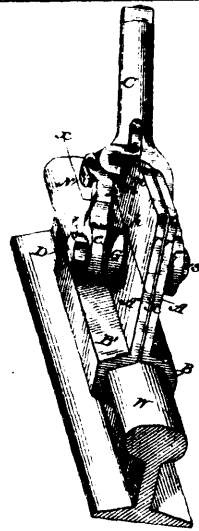
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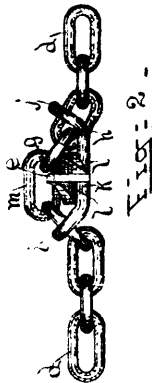
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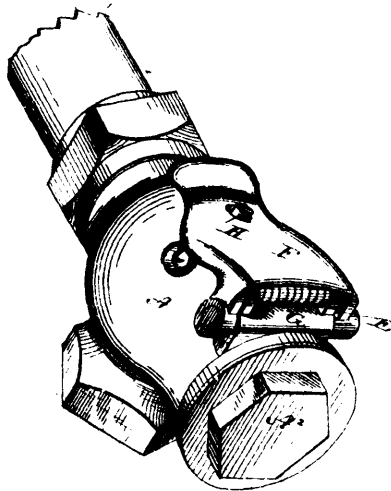
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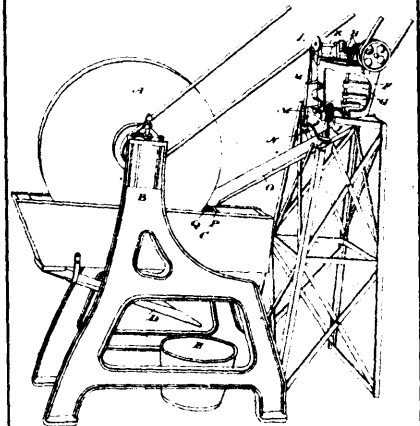
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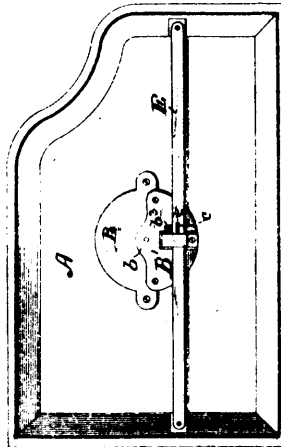
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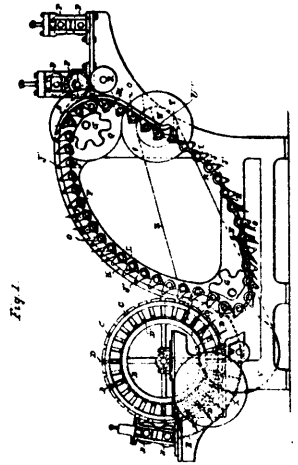
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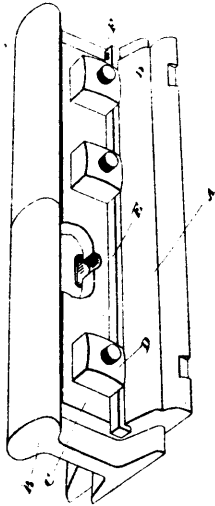
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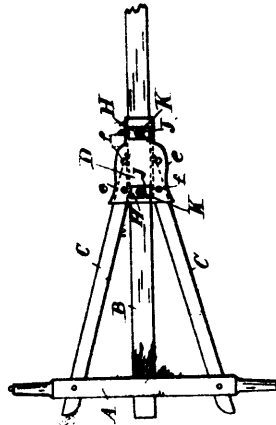
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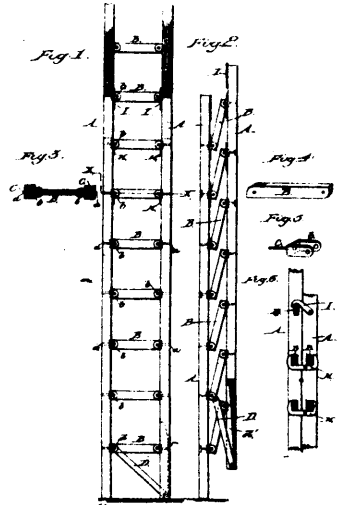
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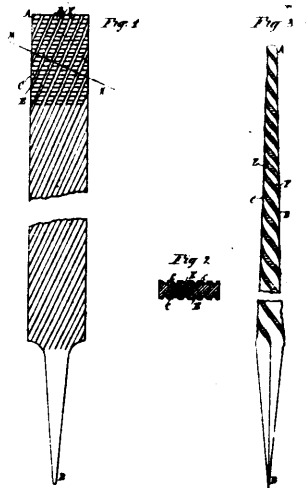
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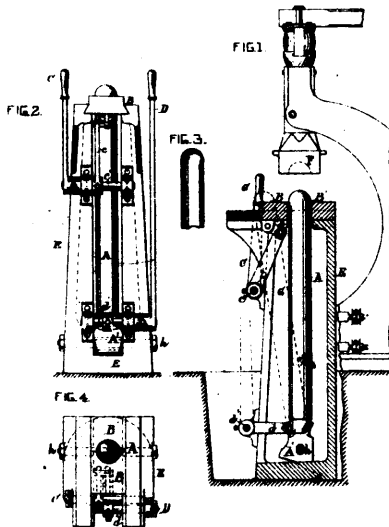
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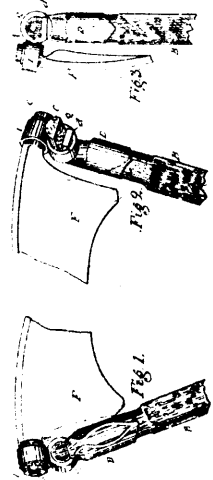
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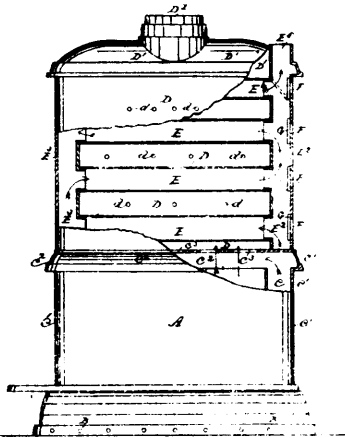
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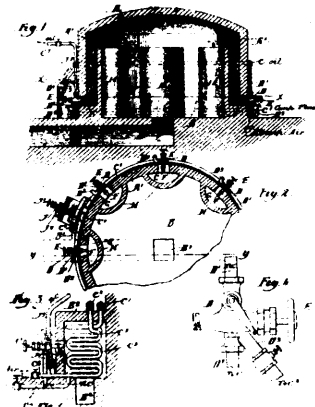
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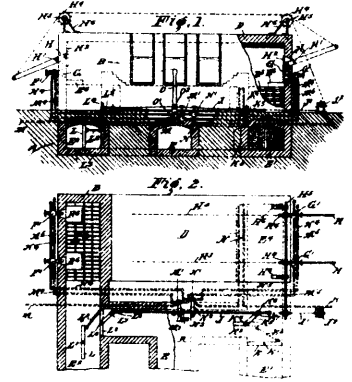
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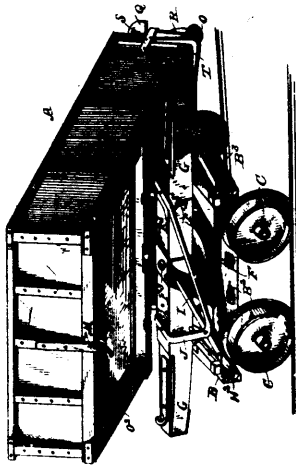
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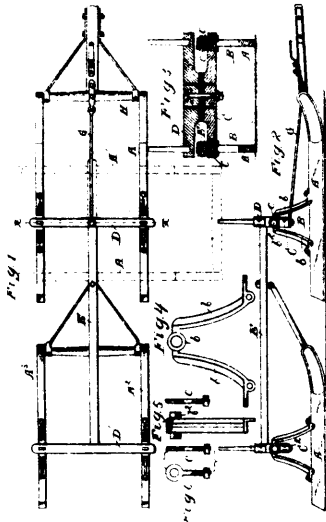
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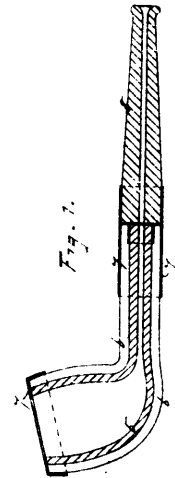
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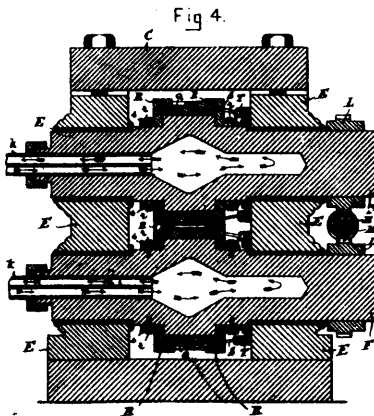
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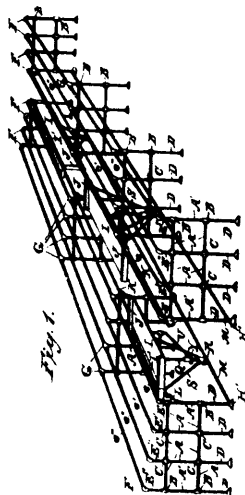
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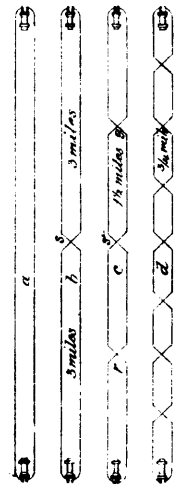
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