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INVENTIONS PATENTED.

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

No. 28,420. Extension Hanging Device.

(Appareil d'étendage à extension.)

William L. Richardson, Ansonia, Conn., U.S., 1st February, 1888; 5 years.

Claim.—1st. An extension suspending device consisting of a case, a shaft journalled therein, and a spring connected to said shaft and surrounding it, to the outer end of which the article to be suspended is attached. 2nd. An extension suspending device consisting of a case, a shaft journalled therein, a spring connected to the shaft, and a clamp through which the spring passes and which acts to hold the article suspended from the spring at any desired position. 3rd. An extension suspending device consisting of a case, a shaft journalled therein, a carrying spring attached to the shaft, and a clamp through which the spring passes, consisting of an inner rigid plate and an outer pivoted plate, said spring in use passing between the plates and over the end of the pivoted plate, thus causing the upper end of the pivoted plate to clamp the spring firmly. 4th. An extension suspending device consisting of a case, a shaft journalled therein, a carrying spring attached to the shaft, a clamp acting to hold the spring at any desired position, and a winding device whereby the spring may be adjusted if required.

No. 28,421. Sectional Steam Boiler.

(Chaudière à vapeur en sections.)

Andrew Mercor, Brooklyn, N. Y., U. S., 1st February, 1888; 5 years.

Claim.—1st. In a steam boiler composed of cast sections containing independent water or steam spaces, the combination of an intermediate series of like sections, as shown, comprising the furnace walls and the double series of direct sectional flues, with a front or door section containing the final sections of said flues, and having a flue chamber for connecting the same together, and a rear section comprising a draught passage, a flue delivery and a fire back in one piece. 2nd. In a steam boiler composed of a series of cast sections, the combination of a double series of direct unobstructed sectional flues, substantially as shown, a passage connecting the lower series at the rear with the furnace, a chamber connecting the lower with the upper series at the front thereof, and a draught eduction chamber or pipe located at the rear of the upper series, whereby a triple exposure of heated furnace gases to the water spaces of said boiler is obtained. 3rd. The combination, with the double series, of direct unobstructed flues of a front cleaning door located opposite both series, a rear receptacle or chamber opposite the upper series, and a draught passage for discharging deposits from the rear of the lower series into the furnace, for the purposes set forth. 4th. In a steam boiler composed of separable sections, the combination therewith of a double ribbed joint, the same consisting of a faced rib and of a lesser packing rib parallel to said faced rib, the said joints, when placed in juxtaposition, forming an enclosed packing space accessible from one side thereof, as specified. 5th. The combination, with the cast sections of a sectional steam boiler, of sockets or recesses cast in the water legs of said sections for the reception of the trunnions of the rocking grates, arranged substantially as described, the said sockets being vertically elongated to permit the introduction or removal of said grates. 6th. The combination, with the grate trunnion sockets, of protecting blocks for capping said trunnions, and castings, substantially as shown, for retaining said blocks and trunnions in place, said castings having inverted bearing sockets and provided with draught corrugations, as and for the purposes set forth. 7th. The means herein described for securing the jacketing material upon the united boiler sections consisting, namely, of marginal ribs cast upon said sections, front and rear plates secured, as shown, to the end sections and sheathing supported upon said ribs and terminating at said plates, and means for binding the whole in place (as rods extending through lugs projecting from said ribs as shown).

No. 28,422. Tubular Lantern.

(Lanterne tubulaire.)

Ernest Schultz, Hamilton, Ont., 1st February, 1888; 5 years.

Claim.—1st. In a tubular lantern, the combination of the circular ring C, vertical wires *d, c, d, d* and disc D, substantially as and for the purpose specified. 2nd. In combination with the ring C and the canopy G, of the lift-wires F, F, their upper ends being secured to canopy G, and their lower ends bent at right angles to catch under, and hold the ring C, to raise the globe, substantially as and for the purpose specified. 3rd. The openings *f, f, f, f*, in the horizontal part of the tubes B, B, substantially as and for the purpose specified. 4th. The combination of the guard C, *d, d, d, d*, disc D, lifting wires F, F and loops J, J, substantially as and for the purposes specified. 5th. The combination of the elongated slot *i* in the collar M, hook *h* and spindle *k*, substantially as and for the purpose specified.

No. 28,423. Manufacture of Frame Plates for Rolling Stock.

(Fabrication de plaques de garde de matériel roulant.)

Samson Fox, Harrogate, Eng., 1st February, 1888; 5 years.

Claim.—1st. The method or process of manufacturing frame plates for rolling stock, with flanges and with square corners and fillets or projections, which consists in cutting a suitable plate to approximately the form, but somewhat larger than the required frame plate, heating same, producing by pressure the required flange or flanges at one side, and bulgings or embossments at the contrary side, reheating the plate and, by pressure, forming out of the metal of said bulgings or embossments the desired square corners and fillets or projections, substantially in the manner hereinabove described. 2nd. As a new article of manufacture, a frame plate for rolling stock with flange or flanges at one side, and square corners, fillets or projections at the reverse side, produced by cutting a suitable plate to approximately the form, but somewhat larger than the required frame plate, heating same, producing by pressure the required flange or flanges at one side, and bulgings or embossments at the contrary side, reheating the plate and, by pressure, forming out of the metal of said bulgings or embossments the desired square corners and fillets or projections, substantially in the manner hereinabove described.

No. 28,424. String Fastening for Musical Instruments.

(Attache-corde pour instruments de musique.)

Ellis L. Spencer, Brantford, Ont., 1st February, 1888; 5 years.

Claim.—1st. A string fastening for musical instruments consisting essentially of an adjusting screw, a plunger in contact with the end of said screw and carrying the end of the wire or string, a socket for said plunger, and a bearing for said screw, whereby the tension of the wire is regulated by the operation of the adjusting screw, substantially as and for the purpose described. 2nd. In a string fastening for musical instruments, the combination, with an adjusting screw, of the plunger D having perforations through which the wire is threaded or passed, for the purpose described. 3rd. The plunger pin or needle D having the holes *d, d* and seat or socket *d*, in combination with a wire threaded through said holes, as shown and described, and a screw for adjusting said plunger so as to regulate the tension of the wire, substantially as described. 4th. In a piano, the combination, with the series of strings and a suitable framing, of the beam C having sockets, recesses or perforations *e, c*, plungers or pins to which the wires are fastened, and means whereby said plungers or pins are adjusted within said sockets, recesses or perforations, substantially as and for the purpose specified. 5th. In a device for tuning pianos and like musical instruments, the combination, with a suitable framing and with the wires and their attachments, of the plate F and adjusting screws passing through said plates and serving to regulate the tension of the wires, substantially as described.

No. 28,425. Carpet Stretcher.

(Tendeur de tapis.)

Charles T. Mantor, Bismark, Mo., U. S., 1st February, 1888; 5 years.

Claim.—The combination, with the body A, provided with the long-

itudinal slot *a*, having a bevelled inner end wall *at*, of the lever *B*, provided with a slot *b*, provided with a bevelled inner end wall *bt*, the head *Bt* pivoted in said slot *b*, and the toothed plate *c*, secured to said head and adapted to operate substantially as herein set forth.

No. 28,426. Fanning Mill. (*Tarare-cribleur.*)

William H. Shapley, Brantford, Ont., 1st February, 1888; 5 years.

Claim.—In a fanning-mill screen agitator, the combination of open slot *H* with pin *K*, screw *L* and nut *M*, substantially as and for the purposes set forth.

No. 28,427. Thill Coupling. (*Armon de limonière.*)

Henry Knupp and John Knupp, Warren, Penn., U.S., 1st February, 1888; 5 years.

Claim.—1st. The combination, with a pivoted thill-iron and an elastic or compressible anti-rattler *F*, placed next the thill-iron eye, substantially as specified, of a clamp comprising opposite plates *H*, *I*, hinged together at *j* and bearing on the part *F*, a screw *J* passed through the parts *H*, *I*, and a nut *K* on said screw, substantially as described for the purposes set forth. 2nd. The combination, with a pivoted thill-iron and an anti-rattler *F*, placed next the thill-iron eye, substantially as specified, of a clamp comprising opposite connected plates *H*, *I*, a screw *J* passed therethrough, and a nut *K* on the screw, and the opposing faces of the parts *H*, *K*, being serrated at *k*, substantially as described for the purposes set forth. 3rd. The combination, with a pivoted thill-iron and an anti-rattler *F*, placed next the thill-iron eye, substantially as specified, of a clamp comprising opposite plates clamping the anti-rattler, and one of said clamp-plates provided with a lug *M* overlying the head *e* of the thill-iron pivot *E*, substantially as described for the purposes set forth. 4th. The combination, with a pivoted thill-iron and an anti-rattler *F*, placed next the thill-iron eye, substantially as specified, of a clamp comprising opposite plates connected at one end and clamping the anti-rattler, and a screw and nut at the opposite ends of the clamp-plates, and said clamp-screw passed alongside the nut *e* of the thill-pivot *D*, substantially as described for the purpose set forth.

No. 28,428. Endless Chain Elevator for Unloading Vessels. (*Monte-charge à chaîne sans fin pour décharger les vaisseaux.*)

Clark Chase, Fall River, Mass., U.S., 1st February, 1888; 15 years.

Claim.—1st. The combination, substantially as hereinbefore described, of an endless chain, a series of elevator buckets thereon, a driving shaft, an endless sprocket-chain driven by said driving shaft over a tightening wheel, and provided with lugs for engaging with said bucket chain. 2nd. The combination, substantially as hereinbefore described, of an endless bucket chain, a series of elevator buckets thereon, a driving shaft, an endless sprocket chain driven by said shaft and provided with lugs for engaging with said bucket chain, and a guide plate at the rear of the working portion of said driven chain for maintaining the lugs thereon in driving contact with the bucket chain. 3rd. The combination, substantially as hereinbefore described, of the elevated outrigger beams above the face of a wharf, a driving shaft mounted on said beams, one or more sprocket wheels on said shaft, one or more endless driving chains supported on, and driven by, said sprocket wheels, and an endless bucket chain inclosing said driving chain at front and rear, and mounted in a frame swivelled upon said driving shaft and vertically adjustable independently thereof. 4th. In an elevator, the combination, substantially as described, of an endless bucket-chain embodying separate sprocket chains, coupled together at alternate links by a series of lateral bars, a series of buckets attached at their backs to a portion of said bars, and all of them serving as lifting lugs for engagement by the operating mechanism. 5th. In an elevator, the combination, substantially as hereinbefore described, of a complex endless bucket chain embodying a series of lateral bars, a series of buckets attached to a portion of said bars, and an endless driving chain provided with two series of lugs, for progressively engaging in pairs with said lateral bars in operating the elevator. 6th. In an elevator, the combination, substantially as hereinbefore described, of a complex bucket chain embodying separate chains and lateral bars, and an interior complex driving chain embodying separate chains, each provided with a series of lugs for engaging with the bars on the bucket chain, and a series of lateral bars for maintaining said lugs in positions for properly engaging with the bars in the bucket chain. 7th. In a bucket chain frame, the combination, substantially as hereinbefore described, of the four side plates, each pair separated at their inner edges to afford a longitudinal slot at each side of the frame, a pair of longitudinal angle irons adjacent to said slots, and one or more sprocket wheel shafts provided with boxes wider than said slot and between said angle-irons, and locking devices by which said boxes are confined longitudinally on said shaft. 8th. The combination, in the slotted bucket chain frame, of the angle irons in pairs parallel with the sides of each slot, the sprocket wheel shafts and their boxes clamped against longitudinal movement and laterally embracing each pair of said angle-irons. 9th. The combination, substantially as hereinbefore described, of a complex bucket chain composed of two separate chains, and a series of lateral bars connecting said chains and projecting laterally beyond both of them, a series of buckets mounted on said bars, and an elevator frame in which said bucket chain is mounted, and longitudinal guides on the inner sides of said frame for receiving the projecting ends of said bars.

No. 28,429. Mowing Machine. (*Faucheuse.*)

William E. Craig, Sarnia, Ont., 1st February, 1888; 5 years.

Claim.—The combination, with rock shaft *A*, hollow arm *B* and shaft *L*, provided with crank-wheel *K*, of the connecting bar *D* having jaws *D*, *D* and horn *D*, quadratum *G* hung from said horn, and pitman *I*, *J* pivoted to the pendulum *M*, said jaws being pivoted to the shoe *E* of the outer-bar *F*, and the pitman to the knife *N* and crank-wheel *K*, respectively as set forth.

No. 28,430. Spring Tooth Harrow. (*Herse à dents élastiques.*)

George Gillies and Henry Parker, Gananoquo, Ont., 1st February, 1888; 5 years.

Claim.—1st. The centre draft bar *12*, having an endwise adjustment, in combination with the harrow sections, having side drafts *15*, as set forth for the purpose described. 2nd. The harrow sections, having the outer longitudinal bars connected by a middle bar curved at the ends, as set forth. 3rd. The adjustable runners *6*, having a bent end journalled in a bearing *8*, clipped to the harrow bars and provided with a quadrant and spring bolt in the bearing engaging with holes in the quadrant, to lock the runner at an adjusted position, as set forth. 4th. The combination of the bars *1*, *2*, provided with locking indentations and projections *5*, tooth-holder *3*, having an indentation *d*, and the clip and tie bar to fasten the tooth in the tooth-holder and clamp the bars together, as set forth.

No. 28,431. Journal Bearing. (*Coussinet de tourillon.*)

Mahlon Randolph, New York, N. Y., U. S., 1st February, 1888; 5 years.

Claim.—1st. In an anti-friction journal bearing, a metallic shell or housing, provided with re-entering retaining lugs of a shorter length than the shell or housing, and adapted to hold the anti-friction bushing in the shell in such a manner as to interpose a cushion of the bushing material between the sides and ends of the said retaining lugs, and the metallic portions of the journal and its retaining flanges, substantially as described. 2nd. An anti-friction journal bearing, formed of a bushing or wearing part made of a self-lubricating compound of plumbago, a strengthening fibre and a strong cementing size pressed into a suitable metallic shell, for holding the bushing in place and form, and held in the said shell by suitable retaining lugs, the sides and ends of which are covered by the said bushing material. 3rd. The combination of an anti-friction bushing for journal and similar bearings of machinery, and a metallic shell, provided with retaining lugs made to overlap circumferentially the end flanges or collars of the journal, and shortened at their ends, so as not to reach to the ends of the shell or housing, substantially as described.

No. 28,432. Buckle Snap. (*Ressort de boucle.*)

William S. Johnstone, Hawkesbury, Ont., 2nd February, 1888; 5 years.

Claim.—1st. A buckle snap, consisting of converging sides *A*, *A*, terminating in a hook *B* at one end, and closed by a bar *J* at the other end, and connected by intermediate bars *C*, *F* and *I*, and bar *G*, having a tit *G*, and provided with a spring *E*, substantially as and for the purpose set forth. 2nd. A buckle snap, consisting of the sides *A*, *A*, converging laterally and longitudinally at one end, and terminating in a hook *B*, and provided with tits *D*, *D*, and connected by bar *C*, having a ridge *C*, and by bars *F* and *I*, and a bar *G* provided with a tit *G*, and a spring *E* held removably in position by the said tits and ridge, as set forth.

No. 28,433. Letter Book. (*Livre de lettres.*)

Charles J. Beal, London, Ont., 2nd February, 1888; 5 years.

Claim.—As a new article of manufacture, a self-indexing letter-book, having letters on the leaves, as described and shown.

No. 28,434. Vapour Burner. (*Bec à vapeur.*)

Warren M. Abbott, Philadelphia, Penn., U.S., 2nd February, 1888; 5 years.

Claim.—In a vapor burner, the combination of the cupped base, the jacket rising therefrom and provided with air inlets at its lower end, a water pipe provided with an enlarged water-chamber filled with asbestos, a removable perforated cap for this chamber, a rotor *A* receiving said water chamber and provided with a horizontal deflector, an oil-supply pipe leading into said rotor, and the perforated *T*-heads in the drip pan communicating with the said rotor, all constructed and adapted to operate substantially as described.

No. 28,435. Necktie. (*Cravate.*)

Donald M. Smith, Toronto, Ont., 2nd February, 1888; 5 years.

Claim.—1st. As a new article of manufacture, a necktie having side wings or projections from the upper part of the tie body to represent a false neck band, substantially as shown and described. 2nd. In a necktie, the combination, with the body of the tie having the side wings, of the clasp *C* for embracing the collar button, substantially as specified. 3rd. In a necktie having side wings or projections to represent a false neck band, the stiffening plate *D* having a clasp for the collar button made in one therewith, for the purpose described. 4th. The blank *D*, having curved arms *c*, *c*, prongs *c*, *c* and slips *c*, *c*, substantially as and for the purpose described.

No. 28,436. Land Roller. (*Rouleau d'agriculture.*)

James G. Mallery, Flint, Mich., U.S., 2nd February, 1888; 5 years.

Claim.—1st. In a land roller, the combination of two rollers, one carrying a laterally projecting draft-arm, and the other a forwardly projecting stub-tongue, said draft-arm and stub-tongue being pivotally secured together, substantially as and for the purpose described. 2nd. In a land roller, a roller consisting of a series of staves *e* provided with shoulders *d*, metallic spider *J* having slotted flanges *a* and bolts *e*, substantially as set forth. 3rd. In a land roller, the combination of the rollers *A*, *B*, constructed substantially as described, axes *C*, standards *D*, boxes *E*, draft-arm *F* and stub-tongue, the parts being constructed, arranged and operating substantially as and for the purpose described.

No. 28,437. Flush Valve for Water Closets.*(Valve de lavage pour cabinets à Eau.)*

Thomas Campbell and James H. McPartland, Saint John, N. B., 2nd February, 1888; 5 years.

Claim.—1st. The combination of the cylinder C and the piston A, substantially as and for the purpose hereinbefore set forth. 2nd. The combination with the cylinder C and the piston A, of the rod F and the down-pull G, substantially as and for the purpose hereinbefore set forth.

No. 28,438. Door Knob. (Bouton de porte.)

Joseph Bardsley, Brooklyn, N. Y., U. S., 2nd February, 1888; 5 years.

Claim.—The knob shank, having the open slot at its inner end, and the flat plate contained in said slot, combined with the wooden knob having a socket to receive the inner end of said shank, one longitudinal edge of said plate being embedded in the knob when the parts are in operative position, while the other longitudinal edge of same remains in said slot, substantially as set forth.

No. 28,439. Safe Lock. (Serrure de coffre-fort.)

Harry Stainnought, Brooklyn, N. Y., U. S., 2nd February, 1888; 5 years.

Claim.—1st. A safe, having its lock and combination contained in the body at one side of the door-opening, the bolts of which lock are arranged to extend bodily from the jamb within the said opening and have engagement with the door, substantially as set forth. 2nd. The combination, with a safe, having a door opening and a lock, and its combination fitted in said safe at one side of the door opening, of a door fitted to said opening, provided with slotted edges adapted to receive the bolts of the lock, and means for manipulating said lock, substantially as herein shown and described. 3rd. The combination, with a safe, having a door opening and a lock, and its combination fitted in the body of the safe at one side of said opening, said lock provided with upper and lower angular bolts, arms carrying posts adapted to reciprocate said bolts, and a hinged locking plate adapted to secure said bolts in an open or closed position, of a door provided with a slot in the edge adapted to receive said bolts, substantially as shown and described, and for the purposes herein set forth. 4th. The combination, with a safe and a lock, and its combination fitted in the body of the safe, said lock provided with an upper and lower angular bolt, provided with stop plates upon the outer face, and carrying posts adapted to reciprocate said bolts, a hinged locking plate carrying blocks upon its inner face adapted to engage the stop plates upon the bolts, and means for manipulating said lock plate, of a door fitted in said safe, provided with a slot in the edges thereof, substantially as shown and described and for the purposes herein set forth. 5th. The combination, with a safe and a lock, and its combination fitted in the body of the safe, said lock provided with an upper and lower angular bolt, having stop plates upon the outer face, arms carrying posts adapted to reciprocate said bolts, a hinged finger carrying locking plate, having blocks upon its inner face adapted to engage said stop plates, a series of rotary disks slotted to receive the fingers of the locking plates, headed pins adjustably attached to said disks, having slots cut in said heads adapted to register with a given figure of the combination, of a door fitted in said safe, provided with slotted edges, substantially as herein shown and described. 6th. A safe, provided with a lock and its combination within the body, dials upon said body, and knobs revolving upon said dials, provided with a notch in their periphery, adapted to register with a given number upon said dials, and a door fitted within the safe, having a slotted edge adapted to receive the bolts of the aforesaid lock, substantially as shown and described. 7th. In a combination lock, the combination, with a safe and a door fitted thereto, having a slotted edge, of the reciprocating angular bolts 14 and 15, adapted to enter the slots in said door, the key posts 17, having an arm 18 adapted to engage pins 19 upon the said bolts, and means for securing the bolts in an unlocked or locked position, substantially as herein shown and described. 8th. In a combination lock, the combination, with a safe and a door fitted thereto, having a slotted edge, of the reciprocating angular bolts 14 and 15, adapted to enter the slots in said door, the key posts 17 having an integral arm 18 adapted to engage pins 19 upon said bolts, the hinged finger carrying locking plate 27, the revolving disks 33, provided with a transverse peripheral slot 34 and a longitudinal peripheral slot 35, headed pins 36, provided with a notch 46, in the periphery of said heads, adapted to register with a predetermined figure produced upon the safe body, all arranged to operate substantially in the manner and for the purposes herein set forth.

No. 28,440. Steam Boiler. (Chaudière à vapeur.)

Miles L. Clinton, Ithaca, N. Y., U. S., 2nd February, 1888; 5 years.

Claim.—1st. The combination, with the horizontal boiler sections provided with ascending flues N, descending flues O and ascending flues P, of a base ring B provided with compartments b₁ connecting the lower ends of the flues O and P, substantially as set forth. 2nd. The combination, with the horizontal boiler sections G, H, H', H'' and dome I, of the central water column E communicating with the water and steam spaces of the boiler, substantially as set forth. 3rd. The combination, with the horizontal boiler sections G, H, H', H'' and the dome, of the central water column E, communicating at its upper end with the dome, and water pipes p connecting the lower portion of the water column E with the boiler section G, substantially as set forth. 4th. The combination, with the horizontal boiler sections, provided with flues N, O, P, of the base ring B, provided with compartments b₁, having openings b₂ and manobulgates b₃, substantially as set forth. 5th. The combination, with the boiler sections and the central water column E, of the metallic protector F surrounding the water column within the fire chamber, substantially as set forth. 6th. The combination, with the boiler sections, having ascending flues N, of the pendant metallic plates r, arranged in the mouths of said flues, substantially as set forth. 7th. The combination, with the boiler sections and the central water column E, of the

circular grate frame G surrounding said column, and the grate sections d resting on said frame, substantially as set forth. 8th. The combination, with the boiler sections, of the smoke-box J resting on the ann. a fuel magazine Q provided with an opening q₁, a cover q₂, and a valve q₃ connected with the cover q₂, substantially as set forth. 9th. The combination, with the grate provided with a rack bar u₂, of the shaking lever u provided with a gear segment u₁ meshing with said rack bar, substantially as set forth.

No. 28,441. Door Bell. (Timbre de porte.)

Charles L. Livingstone, Battle Creek, Mich., U. S., 2nd February, 1888; 5 years.

Claim.—1st. In a door bell or gong, the combination, with the central post E and with its toothed wheel affixed to and turning therewith, of a pivoted pallet J carrying the armings J₁, one arm being connected with a reacting spring, and the other carrying the clapper, substantially as shown and described. 2nd. In combination with the base plate and a striking mechanism, with a handle for operating the same, the central post carrying the toothed wheel F, such post terminating at its outer end about flush with the outer face of such plate, and provided with a square socket, as set forth, for receiving the square end of the spindle, and having its other end interiorly threaded, as described, for securing the bell thereto, all substantially as shown and described. 3rd. In combination with a striking mechanism, the base plate, the control post and its coated wheel, such post terminating with the outer face of this plate, and a spindle on the knob or handle adapted to extend through the door frame and into a socket in said post, and having secured to it, before it is so applied, the outer shield or plate q, as and for the purposes set forth. 4th. In combination, a bell and clapper, the central post E carrying the bell and toothed wheel, the opposite uprights I and L, and the plate M serving to connect together this post and the uprights, the pallet engaging said toothed wheel, and the reacting spring for such pallet, all substantially as and for the purposes set forth.

No. 28,442. Journal Bearing.*(Cousinet de tourillon.)*

Mahlon Randolph, New York, N. Y., U. S., 2nd February, 1888; 5 years.

Claim.—1st. In an anti-friction journal bearing, a metallic shell or housing provided with re-entering lugs or retaining ribs of the same length as the rotating shell, and adapted to receive the end thrust of the axle, substantially as described. 2nd. An anti-friction journal bearing formed of a bushing or wearing part made of a self-lubricating compound of plumbago, a strengthening fibre and a strongly cementing size pressed into a suitable metallic shell for holding the bushing in place and form, and held in the shell by suitable retaining lugs of a length equal to the length of the bearing, so that their ends shall act as longitudinal stops, substantially as described. 3rd. The combination of an anti-friction bushing for journal and similar bearings of machinery, and a metallic shell provided with retaining lugs made to overlap circumferentially the end faces, or collars of the journal, and of the same length as the shell, so as to form longitudinal stops against the displacement or injury of the bushing, substantially as described.

No. 28,443. Journal Bearing.*(Cousinet de tourillon.)*

Mahlon Randolph, New York, N. Y., U. S., 2nd February, 1888; 5 years.

Claim.—1st. A journal or other machine bearing formed of vulcanized fibre, and an anti-friction compound composed of plumbago and an adhering cement combined together, so as to form the bearing surface partly of vulcanized fibre and partly of the lubricating plumbago compound, substantially as described. 2nd. In an anti-friction journal or machine bearing having a lubricating surface of a compound of plumbago and an adhesive mixture, bearing strips of vulcanized fibre imbedded in the anti-friction material, substantially as described.

No. 28,444. Photograph Burnisher.*(Calandre de photographie.)*

Warron H. Boles, Syracuse, N. Y., U. S., 2nd February, 1888; 5 years.

Claim.—1st. In a photograph burnisher, a tubular burnishing or polishing tool open from end to end and having an opening to receive the chimney of the heating lamp, and a hinged fender or hood, to permit ingress and egress of the lamp, combined with such lamp, substantially as described. 2nd. In a photograph burnisher, a tubular burnishing or polishing tool open from end to end and having an opening to receive the chimney of the heating lamp, and a hinged fender or hood to permit ingress and egress of the lamp, and a stationary fender co-operating with the hinged fender, to inclose the upper end or outlet of the lamp chimney, combined with such lamp, substantially as described. 3rd. In a photograph burnisher, a burnishing tool provided with fulcrum arms and adjustable pivot or fulcrum screws on which said arms rest, and an intermediate temper-screw, substantially as described. 4th. In a photograph burnisher, the burnishing or polishing tool and a heater therefor, combined with a temperature indicating device, such as a thermometer, substantially as described. 5th. In a photograph burnisher, the tubular feed-roll d, open from end to end to ventilate the same, combined with a burnishing tool, and means to heat the latter, substantially as described. 6th. The feed-roll of a burnishing machine, the acting or feeding surface of which is knurled as distinguished from draw-filed, substantially as described.

No. 28,445. Hinge. (Charnière.)

Joseph Strachan, Brooklyn, N. Y., U. S., 2nd February, 1888; 5 years.

Claim.—1st. A hinge, substantially as shown and described, consisting of a circular slide adapted to be attached to the lid or object

to be hinged, and a fixed circular track in which the slide moves. 2nd. A hinge, substantially as shown and described, consisting of a slide connected with the lid or object to be hinged, a connecting slide on which the first slide moves, and a fixed track on which the second slide moves. 3rd. A flush hinge, substantially as shown and described, consisting of an outer semicircular box attached to the under side of the fixed portion, a connecting slide shaped to fit the interior of the box and adapted to move upon its inner surface, and a curved portion attached to the lid, shaped to fit the interior of the connecting slide and adapted to move upon its inner surface, and plus or projecting pieces for holding said parts together and limiting their motion. 4th. A hinge, substantially as shown and described, consisting of the circular slide connected with the lid or object to be hinged, the circular connecting slide provided with a series of grooves, the dentals projecting from the first slide and working in grooves in the second slide, the fixed circular box in which the slides move, and the track and the stop pin attached to said box and projecting into a groove in the second slide so as to hold it in its position and limit its motion. 5th. A hinge consisting of the parts A and B, the slide E provided with slots *a, o* and *n*, the box F, the tracks *g, r*, the pins *h*, the projecting portion *l*, the curved portion *c* and the pieces *b, b*, substantially as shown and described.

No. 28,446. Apparatus for the Manufacture of Frame Plates for Rolling Stock. (*Appareil de fabrication des plaques de garde pour matériel roulant.*)

Samson Fox, Harrogate, Eng., 2nd February, 1888; 5 years.

Claim.—1st. A machine for the manufacture or formation of frame-plates for rolling stock, comprising a head, a movable platform or table, actuating mechanism, a male die, a female die, and a recessed floor adapted to be used in conjunction with punches for producing flanges at one side, and bulgings or embossments at the other side of a frame-plate, substantially as described for the purpose specified. 2nd. In a machine for the manufacture or formation of frame-plates for rolling stock, the combination of a head, a movable platform or table, actuating mechanism, and male die comprising a part C, parts C¹ and C² with projections 5, said parts being secured to the principal part C by bolts and cotters C₃, so that they may be quickly released therefrom, substantially as described. 3rd. In a machine for the manufacture or formation of frame-plates for rolling stock, the combination of a head, a movable platform or table, actuating mechanism, a male die D, a female die D, a floor E with openings, and recesses 6 adapted to be used in conjunction with punches F, G, H, to enter corresponding openings in the male die, so that, when a frame-plate is compressed between the male and female dies, it will be flanged at one side, and be formed with bulgings or embossments at the other side, substantially as described for the purpose specified. 4th. In a machine for the manufacture or formation of frame-plates for rolling stock, the combination of a head A, a movable platform or table, actuating mechanism, a male die comprising principal part C, parts C¹ and C², with projections 5, cotters C₃ and openings at F, G, and H, a female die D, a table or floor E recessed at 6, and puncher F, G, H, all substantially as described for the purpose specified. 5th. In a machine for the manufacture or formation of frame-plates for rolling stock, the combination of a head, a movable platform or table, actuating mechanism, male die I, female die J and floor K, adapted to receive parts L, and mandrels M and N, so as to convert the bulged or embossed parts of a frame-plate previously flanged and bulged or embossed into fillets and square corners, substantially as described for the purpose specified.

No. 28,447. Gas Engine. (*Machine à gaz.*)

The Gas Engine and Power Company, New York, N. Y., (assignees of Frank W. Ofeldt, Newark, N. J.), U. S., 2nd February, 1888; 5 years.

Claim.—1st. In an engine worked by the pressure of an expansive gas, the combination of three cylinders having single-acting pistons, a driving-shaft having three cranks connected to the rods of the said pistons and radiating from the driving-shaft, and having cranks set at angles to each other corresponding to those of the drive-shaft cranks, and slide-valves reciprocated by the relation of the said valve-shaft cranks, to regulate the inlet and outlet of gas to the said cylinders, substantially as and for the purpose set forth. 2nd. In an engine worked by the pressure of an expansive gas, the combination of working-cylinders arranged in the same axial plane and having single-acting pistons, a driving-shaft arranged in the same axial plane as the cylinders, and having cranks radiating at angles to each other and connected to the rods of the said pistons, a valve-shaft arranged parallel with, and rotated mediately by the said driving-shaft, and having cranks set at angles corresponding to those of the driving-shaft cranks, and slide-valves reciprocated transversely or at right angles to the axial plane of the cylinders by the rotation of the said valve-shaft cranks, to regulate the inlet and outlet of gas to the said cylinders, substantially as and for the purpose set forth. 3rd. In an engine having cylinders connected to cranks radiating at angles from the driving-shaft, and a valve-shaft having similar cranks and arranged parallel with the said driving-shaft, the combination, with the said drive-shaft and valve-shaft and with cranks J, I, secured upon the same, of a bar K pivoted to the said cranks and provided with a pivoted support intermediate to the said shaft, for transmitting motion from the said drive-shaft to the valve-shaft, substantially as specified. 4th. In an engine having cylinders connected to cranks radiating at angles from the driving-shaft, and a valve-shaft having similar cranks and arranged parallel with the said driving shaft, the combination, with the said drive-shaft and valve-shaft, and with cranks J, I, secured upon the same, of the bar K pivoted to the said cranks, and provided rigidly with one or more lateral arms *k* pivoted to a crank of the same length as the cranks of the said shafts, said crank being movable around a fixed pin or stud, substantially as specified, to transmit motion from the drive or main-shaft to the valve-shaft. 5th. In an engine worked by the pressure of an expansive gas, the combination of the box-frame A, forming the exhaust-chamber of the engine, vertical piston-cylinders E

and horizontal crank-shafts C, arranged in the same axial plane within the said exhaust-chamber, the valve-chest B arranged above the said cylinders and having ports *e, et*, connecting it respectively with the said cylinders and exhaust-chamber, the valve-shaft D arranged in the said valve-chest above, and parallel with the main-shaft C, and provided with cranks *d* and slide-valves F, and operated mediately from the said main-shaft, and the feed-pump G arranged in the axial plane of the said cylinders and shaft E, C, and having plunger *g* operated by an eccentric *h* upon the said main shaft, substantially as hereinbefore set forth. 6th. In an engine worked by the pressure of an expansive gas, the combination of the box-frame A forming the exhaust-chamber of the engine, and having its lower part A₁ extending endwise, a distance beyond the upper portion A, vertical piston-cylinders E and horizontal crank shafts C, arranged in the same axial plane within the said exhaust-chamber, the valve-chest B, arranged above the said cylinders and having ports *e, et*, connecting it respectively with the said cylinders and exhaust-chamber, the valve-shaft D arranged in the said valve-chest above and parallel with the main shaft C, and provided with cranks *d* and slide-valves F, and operated mediately from the said main-shaft, the feed-pump G arranged upon the extended lower portion A₁, in the axial plane of the said cylinders and shaft E, C, and having plunger *g* operated by an eccentric *h* upon the said main-shaft, and a shaft C₁ inverting endwise the shaft C, and coupled to the latter by means of the hub *h*, key *c* and clamping lugs *h*, of the said eccentric *h*, substantially as specified. 7th. In an engine operated by the alternate vaporization and liquefaction of a substance, the combination, with the exhaust chamber A₂ and the piston-cylinders and shaft E, C, arranged within the said chamber and with the valve-chest, and valves B F arranged above the said chamber of the channel *b*₁, having branch channel *b*₂ forming direct communication between the valve-chest and exhaust-chamber, and the safety-valve *b* closing against the seat in the said channel *b*₁, at a point between the valve-chest and the said branch channel *b*₂, substantially as and for the purpose set forth. 8th. In an engine worked by the pressure of an expansive gas and having valve-shaft D, operated mediately from the main or driving-shaft C, the crank or wheel *l* free to turn upon the said valve-shaft by motion imparted from the said main-shaft, and provided with a stop-block *s* with pin *s*₁, and a pinion *m* upon the said pin, the wheel *l* keyed upon the said valve-shaft and provided with a slot *l*, to receive the said block, and a toothed segment *l* to gear with the said pinion, and a wheel *m* movable upon a hub *l*₂ of the fixed wheel *l*, to gear with the said pinion *m*, for advancing the movement of the said wheel *l*, and thereby of the valve-shaft relatively to the loose wheel or crank *l*, in order to regulate the valve-movement, for stopping, starting and reversing the engine, substantially as specified. 9th. In an engine worked by the pressure of an expansive gas and having valve-shaft D, operated mediately from the main or driving-shaft C, the crank or wheel *l* free to turn upon the said valve-shaft by motion imparted from the said main-shaft, and provided with a stop-block *s*, with pin *s*₁, and a pinion *m* upon the said pin, the wheel *l* keyed upon the said shaft and provided with a slot *l*, to receive the said block, and a toothed segment *l* to gear with the said pinion, and the wheel *m* secured to a hand-wheel *M* and movable upon the hub *l*₂ of the said wheel *l*, having flange *t* in contact with an adjoining surface of the hand-wheel, and the said hand-wheel being provided with sockets *m*₃ having enclosed springs *m*₄, and the end of the said valve-shaft being provided with a disk *m*₅ and a nut to press the said disk against the said springs, to produce friction between the said hand-wheel and the fixed wheel *l*, substantially as set forth. 10th. In an engine for utilizing, as a motive power, a liquid convertible into combustible vapor at a comparatively low temperature, the combination, with a vapor-generating retort communicating with the valve-chest and working cylinder of the engine, a combustion chamber enclosing the retort and a pipe connecting it with the valve-chest, a burner for heating the retort, a supply-pipe leading to the burner, an injector opening into the supply-pipe, and a pipe connecting the retort or vapor generator with the injector, of a tube or chamber P encircled by the said retort, the said tube having openings around its lower edge and connected by a pipe through its closed upper end with the supply pipe to the injector, for the purpose of bringing gas of the highest grade and least density to the burner, substantially as specified. 11th. In combination with the valve-chest, working cylinder or cylinders and oil-pump of the engine, and with the feed-pipe, the gas-pipe, injector, burner, supply-pipe and combustion-chamber, substantially as described, of the retort formed of an inner tubular chamber O, a lined pipe N surrounding the said chamber, and a larger pipe O₁ surrounding the said chamber, and coil N, and wound in opposite direction to that of the said smaller coil N, and the rev. red elbow-joint *n*₁, the said coils N, N₁, joint *n*₁ and chamber O forming continuous connection from the feed-pipe *n* to the pipe *o*, connecting the retort to the valve-chest, all constructed and arranged substantially as hereinbefore set forth.

No. 28,448. Permutation Lock.

(*Serrure à combinaison.*)

Nicholas L. Peterson, Rasmus Jensen and Alexander Crichton, (assignees of Alvin S. Boice, New Richland, Minn., U. S., 2nd February, 1888; 5 years.

Claim.—1st. The combination, with the knob-spindle having a rectangular portion *n*, a plate C carrying a catch *f*, and cam-lever *c* having aperture *e*, of the lock-bolt adapted to engage the cam-lever, the knob-spindle and a series of tumblers, substantially as and for the purposes described. 2nd. The combination, with plate C provided with catch *f*, and a vertical rod having a knob E, and cam lever *c* having a swivel-connection with the plate, of the lock-bolt adapted to engage said cam-lever, the knob-spindle *d* and tumblers, substantially as set forth and described.

No. 28,449. Drive Chain. (*Chaîne sans fin.*)

Joseph A. Jeffroy, Columbus, (assignee of Benjamin Oborn, Marion), Ohio, U. S., 2nd February, 1888; 5 years.

Claim.—1st. In a drive-chain, links composed of tubular end bars provided with pin-to seats which are circular in cross-section and

have internal longitudinal grooves, and have side bars formed integral with the tubular end bars, and provided with pintle seats, in combination with detachable pintles, each provided at its ends with laterally projecting spurs adapted to enter the grooves in the pintle seats, and to engage with opposite ends of the tubular end bars, substantially as set forth. 2nd. In a drive chain, links composed of tubular end bars, provided with pintle seats which are circular in cross-section and have internal longitudinal grooves, and have side bars formed integral with the tubular end bars, and are provided with pintle seats, in combination with detachable pintles, provided at their inner ends with projecting spurs and fitting closely, the grooved seats in the ends of the side bars, whereby dirt is excluded, substantially as set forth.

No. 28,450. Petroleum Gas Carburetter.

(Carburateur de gas de pétrole.)

Louis I. Boivin, Montréal, Que., assignee of Alphonso Krieger, Paris, France, 3rd February, 1883; 5 years.

Résumé.—1o. Un appareil carburateur composé de la caisse a et des cylindres creux b et c, de la cloche d et des montants tubulaires e, f, tels que décrits et représentés et pour les fins indiquées. 2o. Le plateau-funnel supportant le fourneau g, dans lequel est contenu le brûleur h et le vaporisateur k, tels que décrits et représentés. 3o. L'injecteur p, formé de l'ajutage n et son conduit m, en communication avec le récipient r muni de la soupape e, du tuyau ouvert r1 et du robinet r2, tels que décrits et pour les fins indiquées. 4o. En combinaison avec l'appareil, le tuyau m muni des robinets m1 et m2, servant à régler le débit des essences de pétrole, et le levier m3 avec son contre-poids m4, automatiquement lié par la cloche d, tel que décrit. 5o. En combinaison avec le récipient de chlorure de calcium r, le levier q portant la supapée d'obturation q, et aussi m4 par la cloche d, tel que décrit. 6o. L'ensemble ou la combinaison de la caisse a, des cylindres b et c, de la cloche d, des montants e et f, de la plate-forme f, du fourneau g, du brûleur h, du vaporisateur k, de l'injecteur p, du récipient r, du tuyau m, des leviers m1 et q, et du contre-poids m4, formant un carburateur automatique de l'air desséché et incliné à des vapeurs d'essence de pétrole pour la production du gaz d'air carburé, tel que décrit et représenté.

No. 28,451. Combined Harrow and Cultivator.

(Herse-scarificateur.)

Charles Hayes and John Duggan, Dubuque, Iowa, U.S., 3rd February, 1883; 5 years.

Claim—1st. The combination, in a combined harrow and cultivator, of an inside triangular frame carrying a series of reversible ploughs or shovels, and an outside triangular frame carrying a series of reversible knives with double cutting-edges, substantially as described. 2nd. The combination, in a combined harrow and cultivator, of an inside triangular frame carrying a series of diamond-shaped ploughs or shovels secured at the centre to their beams, and an outside triangular frame carrying a series of double-edged cutting-knives set at an angle to the frame, substantially as described. 3rd. The combination, in a combined harrow and cultivator, of an outside triangular frame carrying a series of inclined cutting-knives arranged to cut the soil into strips parallel with the line of draft, and an inside triangular frame carrying a series of ploughs or shovels arranged to engage with the soil between the outs of the knives, substantially as described. 4th. The combination, in a combined cultivator and harrow, of a centre beam having a bent or curved-up front end provided with a clevis secured by metal straps at the sides, an outside and an inside triangular frame, both secured to the centre beam at their front ends, a series of knives attached to the outside frame, and a series of ploughs or shovels attached to the inside frame, and a rear cross-bar connected with the entire frame by means of U-bolts, substantially as described. 5th. The combination, in a combined harrow and cultivator, of a centre beam, an inside triangular frame, an outside triangular frame twisted or set at an angle thereto, a series of knives and ploughs attached to said frames, and a rear cross-bar provided with a row of harrow-teeth, substantially as described. 6th. In a combined harrow and cultivator, the combination of centre beam B, the inside triangular frame section A1, the outside triangular section A, twisted or set at an angle to the others, and the knives and ploughs attached to said section, substantially as described and for the purposes set forth. 7th. In a combined harrow and cultivator, the combination, with a centre beam and a triangular frame secured and set at an angle thereto, of a series of knives having ellipsoidal blades, with double cutting-edges attached to said frame, so as to incline inwardly and to the rear, substantially as and for the purposes set forth. 8th. In a combined harrow and cultivator, the combination, with a centre beam, an inside triangular frame and an outside triangular frame twisted or set at an angle thereto, of a series of cutting-knives having ellipsoidal blades with double cutting-edges secured to said outside frame, so as to incline inwardly and to the rear, and a series of diamond-shaped shovels secured to beams attached to the inside frame, so as to work on a line between the ends of the knives, substantially as and for the purpose set forth. 9th. In a combined harrow and cultivator, the combination, with the centre beam B, the inside triangular frame-section A1 and the outside triangular frame-section A, twisted or set at an angle thereto, of the blocks E, and F1, grooved to fit said frames and provided each with a notch in the front, the knives E with angular shanks and ellipsoidal blades, the ploughs or shovels F, secured to plough beams with angular shanks, and the eye-bolts G, substantially as described and shown.

No. 28,452. Bustle, Bustle Skirt and Panier.

(Tournure, jupon-tournure et panier.)

Moritz Rosenstock, New York, N. Y., U.S., 3rd February, 1883; 5 years.

Claim—1s. A bustle having one or more tubular braided springs of fibrous material, the respective ends of the several strands constituting the tube being connected together and to an attaching band or body belt, substantially as set forth. 2nd. A bustle having two

or more tubular braided springs of fibrous material, and having tapering ends, each spring having independent transverse connection together and to an attaching band, substantially as set forth. 3rd. A bustle having to or more braided tubular springs, each tube being composed of a series of strands or strips of fibrous material, and having tapering ends, said springs being connected together and to a body belt at their respective ends, and having independent transverse connection together and to an attaching band, at a point or points between their ends, an attaching band and adjusting bands or strips attached to the bustle sides, substantially as set forth. 4th. A bustle composed of two or more braided rattan tubes having tapering ends, and means for connecting the same to the body of a wearer or to a garment. 5th. A bustle composed of two or more braided rattan tubes, having tapering ends, and a body belt, said springs being connected to the body belt at their respective ends, and having independent transverse connection together and to the body belt, at one or more points between their respective ends. 6th. A bustle composed of a plurality of overlying tubular braided springs of fibrous material and having tapering ends, the several springs being of unequal size, as described, means, substantially as described, transversely connecting said springs together and to an attaching band or belt, and an attaching band or belt, substantially as set forth. 7th. A bustle composed of one or more tubes of rattan, or other fibrous material, having tapering ends, each tube being formed by braiding a series of strips or strands of such material together and a body belt, and suitable devices for securing the ends of said strands together and for connecting said tube or tubes to the body belt.

No. 28,453. Gate Latch. (Clenche de barrière)

George W. Charleville, McKinney, Texas, U. S., 3rd February, 1883; 5 years.

Claim.—In a gate-latch, substantially as described, the combination, of the rings loosely suspended on opposite sides of a central line, levers extending past such central line, and having their inner ends engaged with the rings on the opposite sides of the centre, from the handle ends, and partition plates interposed between such levers and the rings past which they are extended, substantially as and for the purpose specified.

No. 28,454. Combined Scissors and File.

(Ciseaux-lime.)

Charles P. Hawley, New York, N. Y., U. S., 3rd February, 1883; 5 years.

Claim.—1st. The combination, with a pair of scissors, of a file attached to the thumb ring thereof, substantially as shown and described. 2nd. The combination, with a pair of scissors, of a file hinged thereto adapted to fold out therefrom and parallel therewith, substantially as shown and described. 3rd. The combination, with a pair of scissors, of a spring-actuated file hinged to the thumb ring thereof, substantially as shown and described. 4th. The combination, with a pair of scissors, of a file hinged thereto, provided with an integral spring, whereby said file is retained in given positions, substantially as shown and described. 5th. A nail file B, split at one end to form the hinged portion e, and spring e', substantially as shown and described and for the purpose herein set forth.

No. 28,455. Knit Garment. (Vêtement en tricot.)

Stephen B. Lewis and Franklin F. Lewis, Portago, Wis., U. S., 3rd February, 1883; 5 years.

Claim.—A knit garment having an elastic body portion, and a comparatively inelastic shoulder portion or yoke integral therewith.

No. 28,456. Butter Mould and Press.

(Moule et presse à beurre.)

David Vrooman, London, Ont., 3rd February, 1883; 5 years.

Claim.—1st. The base B formed with outlets G, G, uprights D formed with perforations D1, cover C, pivot bolt E and handles A, A, in combination with the receptacle F, substantially as shown and described and for the purpose specified. 2nd. The base B formed with outlets G, mouldings I, uprights D formed with perforations D1, cover C, pivot bolt E and handles A, A, in combination with the receptacle F and mouldings I, substantially as shown and described and for the purpose set forth.

No. 28,457. Railway. (Chemin de fer.)

Enoch L. Taylor, Philadelphia, Penn., U. S., 3rd February, 1883; 5 years.

Claim.—1st. The combination of two metallic chairs having vertical slots opening through the upper surface, and downwardly extending legs or supports, rails supported by said chairs, a cross tie arranged on edge and fitting down into said slots, and forming a vertical web on the under side of the chairs, and stone, or equivalent ballast packed in around the legs, and webs formed by the tie to prevent the chairs from shifting in any direction, as shown and described. 2nd. A chair for a railway, consisting of the top or rail supporting part, with downwardly extending supporting parts inclosing a large area of ground, and further being provided with a vertical slot opening through the top of the chair for the tie, and one or more retaining or clamping lugs for the rails, as shown and described. 3rd. A chair for a railway, consisting of the top part B, having the downwardly extending supporting legs b, b, the vertical slot C, through part B and part of legs b, and one or more lugs D, substantially as and for the purpose specified. 4th. A chair for a railway, consisting of the top part B having the downwardly extending supporting legs b, b, spread apart at the bottom, the vertical slot C, through part B and part of legs b, and one or more lugs D, substantially as and for the purpose specified. 5th. The combination of the rails, the chairs to support said rails, having downwardly extending legs to rest upon the ground or ballast, also a vertical slot for the cross tie, and lugs to fit over the flanges of the rails, and a metallic cross tie having

notches, into which the rails set, and projections which fit over the flanges of the rails, the said cross tie being fitted down into the slots in the chairs and under the rails, as shown and described. 6th. The combination of the rails, the chairs to support said rails, having downwardly extending legs to rest upon the ground or ballast, also a vertical slot for the cross tie, and lugs to fit over the flanges of the rails, a metallic cross tie, having notches into which the rails set, and projections which fit over the flanges of the rails, and also shoulders G, G, the said cross tie being fitted down into the slots in the chairs and under the rails, and the shoulders G, G, fitted on each side of the legs to prevent longitudinal movement of the tie in the chair, as shown and described. 7th. The combination of a metallic chair supported directly from the ground or ballast, and having a vertical slot opening through the top of the chair, a rail support^o on said chair, and a metallic tie having shoulders fitted in the slot of said chair and supported thereby, and in which the shoulders act as locks to prevent longitudinal movement to the tie in the chair, as shown and described. 8th. Two metallic chairs, upon which the two parallel rails respectively rest, in combination with metallic cross ties, having their upper and lower edges at each end notched, as at e, e, to suit rails having different widths of flanges, and maintain a fixed gauge, the tie being adapted to fit to the chairs with either edge up, as desired, as shown. 9th. The combination of the chairs B, having lugs D, downwardly extending supporting legs b and slots C, with the rails A resting upon said chairs and having their flanges fitting under the lugs D and the metallic cross tie E, having the notches e near each end and on its edge, into which the rails fit, and the projections F, which fit over the flanges of the rails to hold them in place with the lugs D, the said tie fitting down into the slots C in the chairs, as described. 10th. The combination of the chairs B, having lugs D, downwardly-extending supporting legs b, spread apart at their lower ends, and slots C, with the rails A resting upon said chairs and having their flanges fitting under the lugs D, and the metallic cross tie E, having the notches e, near each end and on its edge into which the rails fit, and the projections F, which fit over the flanges of the rails to hold them in place with the lugs D, said tie fitting down into the slots C in the chairs, and stone or equivalent ballast packed in around the legs of the chair and tie to support them and prevent lateral displacement, as shown and described. 11th. The combination of two abutting rails, with a long chair supporting the ends of the rails and having lugs D fitting over the flanges of the rails, and vertical slots for the cross ties, and the two parallel cross ties E, E, having notches e and projections F for the rails, and fitting down into the slots in the chair, as shown and described. 12th. A chair for a rail, made inverted U-shaped from stamped sheet steel, and having the vertical slot C opening through the upper surface and the lugs D, substantially as shown. 13th. In a railway, the combination of the rail, a metallic chair supporting the rail and supported from the earth or ballast, and having a downwardly extending leg extension, and stone, or equivalent ballast, packed in around said leg or extension, to prevent the chair being displaced laterally, and a locking tie bar, which fits into the chair and detachably locks the rail to said chairs, as shown and described. 14th. The combination of the rail, an inverted U-shaped chair, having its ends open and legs spread apart at the bottom and buried in a foundation material, and suitable clamping means to hold the rail to the chair and tie-bar, which connects with the chair and locks the rail to the chair, as shown and described.

No. 28,458. Sheet Metal Can and Manufacture of the Same. (*Boite et fabrication des boîtes métalliques*)

Edwin Norton and Oliver W. Norton, Maywood, Ill., U. S., 3rd February, 1888, 5 years.

Claim—1st. A sheet of metal of a round, square, or other desired form, having a thin strip of sheet solder, of sufficient width and thickness for soldering the seam, secured at or near its edge, substantially as specified. 2nd. A can cap having its rim or edge hemmed with a thin strip of solder, folded over such rim or edge, substantially as specified. 3rd. The can cap or head having a thin continuous ring of solder folded over its rim or edge, substantially as specified. 4th. A sheet of metal having a thin continuous strip of solder folded over its edge, substantially as specified. 5th. A can cap having its rim or edge furnished with a flux, and a strip of solder folded over its edge and embracing the flux, substantially as specified. 6th. The continuous annulus or ring of solder conforming to the outline of the seam to be soldered, substantially as specified. 7th. The thin sheet solder annulus or ring conforming to the outline of the seam to be soldered, and of a novel shape corresponding to the seat of the can cap or head to be soldered, substantially as specified. 8th. The thin sheet solder annulus or ring of double bevel or V-shape, substantially as specified. 9th. A thin sheet disk of solder, having its central portion depressed, to form a registering point to fit in the vent hole for soldering the same, substantially as specified.

No. 28,459. Machine for Coating Paper with Sand, Emery, etc. (*Machine pour appliquer le sable, l'émeri, etc., au papier*)

Henry Slusser and Henry Small, York, Penn., U. S., 3rd February, 1888, 5 years.

Claim—1st. In a machine for coating paper or cloth with sand, emery, or other abrasive material, the combination, with a supporting frame and a glue trough mounted in the frame, of a roller journaled in the trough, a pressure roller and a hopper for containing an abrasive material, substantially as herein shown and described. 2nd. In a machine for coating paper or cloth with an abrasive material, the combination, with a supporting frame and a glue trough, of a roller in the glue trough, a pressure roller, a brush for removing the surplus glue, and a hopper for distributing abrasive material on the cloth or paper, substantially as herein shown and described. 3rd. In a machine for coating paper or cloth with abrasive material, the combination, with a supporting frame and a roller journaled therein, and provided with pulleys at its ends, of a hinged frame, and a roller

journaled in said hinged frame, and provided with pulleys at its ends engaging the pulleys of the first-named roller, substantially as herein shown and described. 4th. In a machine for coating paper or cloth with abrasive material, the combination, with a supporting frame and a roller journaled therein, and provided with pulleys at its ends, of a hinged frame, a roller journaled in said hinged frame, and provided with pulleys at its ends, engaging pulleys of the first-named rollers, and guides carried by said hinged frame, substantially as herein shown and described. 5th. In a machine for coating paper or cloth with abrasive material, the combination, with means for applying glue to the paper or cloth, of a hopper for containing the abrasive material, and means for agitating the said hopper, substantially as herein shown and described. 6th. In a machine for coating paper or cloth with abrasive material, the combination, with a supporting frame, a glue trough and a roller journaled therein, of a shaft provided with projections on its ends, a hopper provided with downwardly-projecting arms resting on the said shaft, and means for revolving the said shaft from the roller, substantially as herein shown and described. 7th. In a machine for coating paper or cloth with abrasive material, the combination, with a supporting frame, a glue trough and a roller journaled therein, of a hinged frame, a roller journaled therein, semicircular guides secured to said frame in front of the roller, and means for operating the said rollers, substantially as herein shown and described. 8th. In a machine for coating paper or cloth with abrasive material, the combination, with a supporting frame, of a glue trough, a water receptacle below the said trough, a roller journaled in the trough, a pressure roller, a brush for removing surplus glue, and a hopper for distributing the abrasive material, substantially as herein shown and described.

No. 28,460. Machine for Road Making.

(*Machine à faire les chemins.*)

François T. Lomont, Fort Wayne, Ind., U. S., 3rd February, 1888, 5 years.

Claim—1st. In a road-making machine, the combination of the supporting frame, the scraper blade, the platform, the tongue, the stotted head pieces, adjusting and locking devices connecting the tongue with the frame, whereby the angle of the tongue relative to the scraper blade may be adjusted, substantially as set forth. 2nd. In a scraper, the herein described frame, consisting of the longitudinal sills formed of angle-iron and converging toward their forward ends, the cross-beam A, in combination with the diagonally-arranged scraper-blades, and the angular brackets E, E, bolted to the vertical webs of the longitudinal sills and also to the scraper-blade, substantially as set forth. 3rd. In a road-making machine, the combination of the supporting frame, the scraper, the two plates P, P, pivoted to the frame and having their inner ends in close proximity to each other, and the bars Q, Q, by which said plates are moved, connected with the inner ends of said plates, and the wheels carried by said plates, whereby the angle of the planes of the wheels relatively to the scraper may be changed, substantially as and for the purpose set forth. 4th. In a road-making machine, the combination of a supporting frame, a tongue, the draft rods, the evener to which the draft rods are connected, and a plate which supports the evener loosely supported at its forward end from the tongue, and at its rear end by the supporting frame, whereby it and the evener may turn relatively to, and independently of both the supporting frame and the tongue, substantially as set forth. 5th. In a road-making machine, the combination of the supporting frame, a vertically adjustable tongue pivoted at its rear end to the frame, the draft rods, the evener to which the draft rods are connected, a plate which supports the evener, supported at its forward end from the tongue, and loosely connected at its rear end with the main frame, whereby, when the forward end of the tongue is vertically adjusted, the plate may move therewith, substantially as set forth. 6th. In a road-making machine, the combination of the longitudinal sills, the head piece J connecting the forward ends of the said sills, and provided with slot J and aperture J², a vertically adjustable tongue passing through said slot J, draft rods which pass through said aperture J², and an evener connecting the forward ends of said draft rods, substantially as set forth. 7th. In a road-making machine, the combination of a supporting frame e, a tongue pivoted thereto, plate L pivoted to the frame and having an eye L¹, through which passes the tongue, and means for moving said plate, whereby the tongue is vertically adjusted, substantially as set forth. 8th. In a road-making machine, the combination of a supporting frame, a tongue pivoted thereto, plate L pivoted to the frame, and having an eye L¹ through which passes the tongue, and slotted, as at I, lever M pivoted to the frame and provided with a pin m, which enters said slot I and is adapted to move the plate L when the lever is rocked, substantially as set forth. 9th. In a road-making machine, the combination of the supporting frame plates P, P, pivoted thereon, standards rising from said plates, vertically adjustable hangers mounted in said standards and carrying the spindles o, on which are mounted the carrying wheels, and devices, substantially as described, for vertically adjusting said hangers, substantially as set forth. 10th. In a road-making machine, the combination of the supporting frame, the diagonally arranged scraper, a carrying wheel, an axle upon which the wheel is mounted, supported by a hanger pivoted to the frame on a horizontal line, the pivotal line of the hanger being in rear of, and above the wheel axle when the latter is raised, whereby, when the machine is in motion, the draft of the frame tends to move backward the wheel and its axle, and hence assists in elevating the frame, and a stop which prevents the too far backward movement of the hanger, substantially as set forth. 11th. In a road-making machine, the combination of a supporting frame, the diagonally-arranged scraper, a hanger supported by the frame on a horizontal axis R and carrying an axle upon which a carrying wheel is mounted, whereby as the standard is rocked, the wheel is raised or lowered relatively to the frame, the wheel axle (when the wheel is raised and the frame consequently lowered) being in front of and below the horizontal axis of the standard, and a stop carried by the supporting frame adapted to arrest the movements of the standard, when the frame has been elevated to the highest point, substantially as set forth. 12th. In a road-making machine, the combination of the supporting frame, the diagonally arranged scraper, a hanger pivoted to the frame on a

horizontal line, an axle and wheels carried by said hanger, a lever by which said hanger is turned on its horizontal pivot, and a lock for retaining said lever in position, the axial line of the wheel being below and in front of the horizontal pivot line of the hanger, substantially as set forth. 13th. In a road-making machine, the combination of the supporting frame, the diagonally arranged scraper, standards *r*, *r'* rising from said frame, a rock-shaft *R* mounted in said standards, a downward projecting hanger *R'* carried by said shaft, an axle and wheel carried by the hanger, a lever *S*, whereby the shaft is rocked, and a lock *S'* for said lever, substantially as set forth. 14th. In a road-making machine, the combination of the supporting frame carrying a driver's seat, carrying wheels adapted to have their angle of inclination relatively to the frame changed, and reversible bars by which the wheels are turned, adapted to be operated either by a person on the driver's seat, or from in rear of the machine, substantially as set forth. 15th. In a road-making machine, the combination of the supporting frame carrying a driver's seat, wheel carrying supports pivoted upon the frame by substantially vertical pivots, whereby the angle of the wheels may be varied, and reversible bars or links attached to the inner ends of the said wheel carrying supports, and adapted to be operated either from the driver's seat or from in rear of the machine, substantially as set forth. 16th. In a road-making machine, the combination of a supporting frame, plates *P*, *P* pivoted on the frame and slotted, as at *pi*, pins projecting through said slots to limit the movements of the plates, wheels carried by said plates, and arms by which the plates are moved, substantially as set forth. 17th. In a road-making machine, the combination of a supporting frame, the diagonally arranged scraper, adjustable wheel carrying supports, pivoted to the frame by substantially vertical pivots, whereby the angles of the wheels can be varied, bars attached to said wheel, carrying supports for adjusting their position to vary the angles of the wheels, and a lock for holding said bars in place after adjustment, substantially as set forth. 18th. In a road-making machine, the combination of a supporting frame, two independently adjustable wheel carrying supports pivoted to the frame on substantially vertical pivots, whereby the angles of the wheels may be varied, and means for independently adjusting and locking said supports after adjustment, substantially as set forth. 19th. In a road-making machine, the combination of the supporting frame, plates *P*, *P* pivoted upon the frame and carrying the wheels and bars *Q*, *Q* pivoted to the inner ends of said plates, and adapted to be turned upon their pivots to project either rearward or forward, whereby they may be operated, and the angles of the wheels changed either by a person in the driver's seat, or from the rear of the machine, substantially as set forth. 20th. In a road-making machine, the combination of a supporting frame, wheel carrying supports pivoted on the frame, whereby the angles of the wheels may be varied, bars *Q*, *Q*, connected with said wheel carrying supports, a rock shaft *X*, carrying a cross-head with which said bars are connected, mounted within convenient reach of the driver, and a latch bar adapted to lock said rock-shaft after it has been adjusted, substantially as set forth. 21st. In a road-making machine, the combination of a supporting frame, wheel carrying supports pivoted on the frame in substantially the manner described, reversible bars *Q*, *Q*, connected with said wheel carrying supports, they being notched, as at *q*, on one side, and having pins *q*, *q*, a holder with which the notched portion of the bars engage, and a rock-shaft situated within convenient reach of the driver and carrying a cross-head, with which the said pins *q*, *q* engage, substantially as set forth. 22nd. In a road-making machine, the combination of a supporting frame, a diagonally arranged scraper carried thereby, supporting wheels *O*, *O*, the wheel *O* being provided upon its outer face with a groove *O*, a cap *Z*, which confines the wheel upon its axle, provided with a groove corresponding with groove *O*, and a series of anti-friction balls mounted in the seat formed by said grooves, and adapted to take the end thrust of the wheel caused by the diagonal arrangement of the scraper, substantially as set forth. 23rd. In a road making machine, the combination of supporting frame, a diagonally arranged scraper carried thereby, supporting the wheels *O*, *O* on opposite sides of the frame, wheel *O* being provided upon its outer face with anti-friction bearings, and the wheel *O* being provided on its inner face with anti-friction bearings, the corresponding bearings on the axles and the interposed anti-friction balls, substantially as set forth.

No. 28,461. Piano Key. (*Touche de piano*.)

Paul Von Tankó, Potis, Austria, 4th February, 1888; 5 years.

Claim.—A piano or organ key having rounded off its two sides A and B, its front end C and its front corners D and F, for the purpose and in the manner substantially as described.

No. 28,462. Steam Injector. (*Injecteur de vapeur*.)

Thomas J. Carroll, Hamilton, Ont., 4th February, 1888; 5 years.

Claim.—1st. The combination, in a steam injector, of the body A, having seatings a and a' for the delivery jet B, and valve ring E, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the body A, ball-valve G, the perforated delivery jet B, with its ring E, substantially as and for the purpose hereinbefore set forth. 3rd. The combination of steam inlet jet B, delivery jet B', ring E, cap B', valve-ball G, with body of injector A having seatings a and a', substantially as and for the purpose hereinbefore set forth.

No. 28,463. Process for Obtaining Cellulose or Wood Fibre. (*Procédé de production de la cellulose ou de la fibre de bois*.)

Charles Kellner, Podgora, near Gorz, Austria, 4th February, 1888; 5 years.

Claim.—The process for obtaining cellulose or wood fibre from ligneous vegetable matter, which consists in heating the said material with a solution of metallic chloride in a closed vessel, while the said solution is being electrolytically decomposed by conducting through it an electric current.

No. 28,464. Machine for Sharpening Saws.

(*Machine à affûter les scies*.)

William Ruttan, Picton, Ont., 4th February, 1888; 5 years.

Claim.—1st. The rake guide B, D, with slotted sides, in combination with the bevel guide P, P, substantially as and for the purposes hereinbefore set forth. 2nd. The bevel guide P, P, secured as above described, in combination with the rake guide B, B, substantially as and for the purposes hereinbefore set forth.

No. 28,465. Railway Tie.

(*Traverse de chemin de fer*.)

William P. Hall, Piqua, Ohio, U.S., 4th February, 1888; 5 years.

Claim.—1st. A railway cross-tie constructed of a single sheet of metal folded through its centre, so as to form a broad flange T-shaped bearing surface, and the depending elastic sides C, spread apart and flanged, substantially as described. 2nd. A railway cross-tie constructed of a single sheet of metal folded and bent throughout its centre, so as to form the broad T-shaped bearing surface for the rails, and the depending outwardly curved elastic sides C, provided with flanges at their lower edges, substantially as described. 3rd. A railway cross-tie constructed of a single sheet of metal bent and folded upon itself throughout its length, forming the broad and strong T-shaped bearing surface for the rails, and the depending convex elastic side C having their lower edges bent or turned in towards the centre line of the tie and provided with flanges D, substantially as described. 4th. A railway cross-tie constructed with the T-shaped bearing surface, and the convex elastic sides C flanged at their lower longitudinal edges, in combination with the rail-chair constructed of a single strip of metal provided with clamping ears and bent around and shrunk upon the tie thus constructed, so as to embrace it closely, the lower ends of the said strip being bent so as to rest upon the lower flanges of the sides C of the tie, substantially as described. 5th. The combination, with the tie constructed with a T-shaped bearing surface and elastic depending flanges sides C, the projecting flanges of the said bearing surface being provided with notches indentations, of the rail chair provided with clamping ears and bent so as to closely embrace the tie, and forced and shrunk into the notches or indentations in the bearing surface, substantially as described. 6th. The combination, with a metallic railway tie constructed with a broad T-shaped bearing surface and convex elastic sides depending from the centre of the lower side of the bearing surface, the edges of the said bearing surface being provided with slight notches or indentations, of the switch rail-chair F constructed of a strip of metal provided with clamping ears, the said strip being bent so as to closely embrace the said bearing surface and rest in the notches in the same, and provided with a continuation K which extends down upon one of the convex sides of the tie, all arranged as and for the purpose described. 7th. The combination, with a metallic railway tie constructed with a broad T-shaped bearing surface and elastic depending sides, the edges of the bearing surface being provided with slight notches *d*, of the switch rail-chair F constructed of a strip of metal provided with clamping ears, the strip being bent so as to closely embrace the bearing surface of the tie and rest in the notches *d*, in the opposite edges thereof, as described.

No. 28,466. Watch Case. (*Boîte de montre*.)

Robert J. Quigley, Toronto, Ont., 4th February, 1888; 5 years.

Claim.—1st. The combination, with a watch-case centre, of a back or bezel having a ring formed on it, to fit into a recess formed in the centre, substantially as and for the purpose specified. 2nd. A watch-case centre made wider than the base of its pendant, in combination with a bezel or back having a ring formed on it, designed to fit into a recess made in the centre, substantially as and for the purpose specified. 3rd. The combination, with a watch-case centre A, of a back or bezel having a ring a formed on it, to fit into a recess formed in the centre A, and a flange *d* to butt against the edge of the centre A, substantially as and for the purpose specified. 4th. A watch-case in which the centre extends above the movement-plate, so that the joint-ring shall strengthen the shape of the case above the said movement-plate, substantially as and for the purpose specified.

No. 28,467. Compound Ventilator Wheel or Fan. (*Ventilateur composé*.)

James E. Barney, Hyde Park, Mass., U. S., 4th February, 1888; 5 years.

Claim.—1st. A compound ventilating wheel or fan composed of a double series of blades A, A, A, A, combined with a shaft D and hubs C, C, C, each blade being secured upon its hubs at an angle to the axis thereof, and the outer ends of each blade secured to a common peripheral ring E, and the concave inner faces of each two alternate front and rear blades arranged relatively as shown, to form an air channel through the wheel at an angle to the axis thereof, as described. 2nd. A compound ventilating wheel or fan composed of a double series of blades, each blade secured upon the hubs at an angle to the axis of the shaft, the outer edges of the blades united to a common peripheral ring, the convex surfaces of each series of blades forming the respective faces of the wheel, and the concave inner surfaces of each two opposite alternate blades forming an air channel diagonally across the shaft, the whole combined with a shaft and rotated in the same direction whereby the concave of the face blades acting as suction, in conjunction with the convex face of the rear blades acting as "plenum," produce a vacuum at the rear of the wheel and in advance of the discharged column of air. 3rd. In a compound ventilating wheel or fan, the template B provided with a straight base line *b b* indented at one side of the centre, as at *b'*, and with two sides of unequal convex curvature, as shown, converging to a point B', when combined with the hubs and peripheral ring of a wheel, to form a blade in which the base line lying in the plane of the axis of the shaft is longer than the peripheral flange of the blade, as specified. 4th. In a ventilating wheel or fan, the template B provided with a straight base line *b b*, and two sides of unequal convex curvature converging to a point B', all as shown, when combined with hubs and peripheral ring of a wheel to form a fan blade.

No. 28,468. Churn. (Baratte.)

William W. Perkins, Palouse, W. T., U. S., 4th February, 1888; 5 years.

Claim.—1st. The combination, in a churn, of a cream-vessel and a cup-shaped dasher, journaled for rotation therein and made with a laterally top, a bottom opening, a side port or outlet at near the top, and a radial wing or piston operating when the dasher is rotated, to force the cream admitted at the bottom of the dasher out through its upper port, substantially as herein set forth. 2nd. The combination, in a churn, of a cream vessel A, a shaft C, stepped therein and journaled in an upper bearing, and a dasher D with a top E, provided with an upper port I, a bottom opening U and a wing W set at the rear edge of the port I, substantially as described for the purposes set forth. 3rd. The rotatable dasher made open at the bottom and closed at the top, and provided with a fluid exit or port at or near the top, and a wing-piston set at the rear edge of the port, substantially as described for the purposes set forth.

No. 28,469. Harrow. (Herse.)

William A. Smith, Truro, N.S., 4th February, 1888; 5 years.

Claim.—1st. The combination of an iron frame E F with the draw-bar attachments D, B, said frame having 32 teeth and so arranged and put together and attached to the draw bar that, when the harrow is in use, not one tooth trails in the track of the other, substantially as and for the purposes hereinbefore set forth. 2nd. The manner of securing the spring teeth T I to the iron frames F F, by the U-shaped clasp c, with bolt and nut, substantially as and for the purposes hereinbefore set forth.

No. 28,470. File-Cutting Machine.

(Machine à tailler les limes.)

George Barnett and Henry Barnett, (assignees of Henry J. Gosling.) Philadelphia, Penn., U.S., 6th February, 1888; 15 years.

Claim.—1st. In a file cutting machine, the combination of two cone pulleys K, K', belt shifter N and shaft L, geared to the carriage driving mechanism, said belt shifting mechanism being connected with, and actuated by the carriage, whereby the speed of the latter is varied as it progresses in its traverse, substantially as described. 2nd. In a file cutting mechanism, the combination of the two cone pulleys K, K', belt shifter N, shaft L geared to the carriage driving mechanism, said belt shifting mechanism being connected with latch H, the latter engaging with carriage G and being provided with cam I, adapted to be raised by shoulder O, to disengage latch H from the carriage, and weight and cord Q, to draw the belt shifter back when latch H is disengaged from the carriage, substantially as described.

No. 28,471. Improvements in Obtaining Gold and Silver from Ores, etc.

(Perfectionnements dans l'extraction de l'or et de l'argent des minerais, etc.)

The Cassel Gold Extracting Company, Glasgow, (assignees of John S. MacArthur, Pollokshields, Robert W. Forrest and William Forrest, Glasgow,) Scotland, 6th February, 1888; 5 years.

Claim.—The process for obtaining gold and silver from ores and other compounds, consisting in treating such ores or compounds with cyanogen or a cyanide, or other substance or compound containing or yielding cyanogen, substantially as specified.

No. 28,472. Gas Lamp. (Lampe à gaz.)

Christian Westphal and Julius Quaglio, Berlin, Germany, 6th February, 1888; 5 years.

Claim.—1st. In gas lamps, the flame of which burns in hot air which is previously heated by its own products of combustion, the arrangement of a casing A with upper openings K for the entering air, and lower openings x for the escaping air and flame, into or through which casing are conducted one, two or more gas pipes a, a', from above or from the side to which are attached within the casing a burner B, the flame of which burns from out of the slit or slits into the glass globe G, and round a deflecting plate h into the chimney E, concentrically arranged in the axis of the casing either from below or from the side, and through which the products of combustion escape upwards. 2nd. In gas lamps as indicated, the arrangement of the gas feed tube a introduced through the chimney E from above or from the side, in combination with the burner body B, into which it laterally introduced the flat burner B, above the plate h closing the casing below, as described. 3rd. In gas lamps as indicated, the elastic securing of the glass globe G to the casing A by means of springs d, d', one of which is fastened to a revolvable lever. 4th. In gas lamps as indicated, the elastic securing of the glass globe G to the casing A, by means of eyelets or nooses of the wire laid around its upper rim or surrounding, and of the hook secured to the casing. 5th. In gas lamps as indicated, the spring m in the flange n of the casing A, with the igniting tube U conducted through from above or round from outside, in combination with the cock I and the flap or slide n, for the purpose set forth and described.

No. 28,473. Explosive Substance and Absorbent Material therefor. (Corps explosible et matière absorbante.)

William D. Borland, London, Eng., 6th February, 1888; 5 years.

Claim.—1st. Carbonized cork as an absorbent for liquid or ignifiable explosives. 2nd. The manufacture of an absorbent for liquid or ignifiable explosives by charring cork, substantially as above specified. 3rd. The manufacture of an explosive by incorporating nitro-glycerine with carbonaceous material obtained by the action of heat upon cork, substantially as above specified. 4th. The method of rendering unflammable an explosive manufactured by incorporating nitro-glycerine with carbonaceous material, as above described,

by the addition of water, by mixing, kneading or applying under pressure, substantially as above specified. 5th. The manufacture of fireproof dynamite having power to resist the action of water by the addition of carbonaceous material obtained by the action of heat upon cork, substantially as above specified. 6th. The manufacture of unflammable dynamite by incorporating carbonized cork with nitro-glycerine, and adding 1/2 lb. (quart) or equivalent absorbent moistened with about its own weight of water, substantially as above specified. 7th. The moulding of dynamite in water into the desired forms or masses for the manufacture of dynamite cartridges, substantially as above described.

No. 28,474. Automatic Reverse Movement and Spacing Mechanism for Electrical and Mechanical Type-Writers. (Mécanisme automatique de renversement et d'espacement pour graphotypes électriques et mécaniques.)

James F. McLaughlin, Philadelphia, Penn., U.S., 6th February, 1888; 5 years.

Claim.—1st. The combination, with the travelling carriage, of the spring-actuated guiding roller L, the guide-rest provided with the arc-shaped recess N, the inclined plate N' on the end of the said guide rest, the roller X and the weight an I cord attached to the travelling carriage, whereby the carriage is reversed when it reaches the terminus of its forward course. 2nd. The combination, with the travelling carriage provided with the rack-bar, of the electro-magnetic step-by-step motor provided with the pawls K, K', for advancing the rack-bar, the front guide-rest provided with the arc-shaped recess, the plate N' and the rollers L and X, whereby the rack-bar is thrown out of engagement with the actuating pawls when the travelling carriage reaches the end of its forward course. 3rd. The combination of the travelling carriage and its advancing mechanism, the carriage being provided with the adjustable spring-actuated guiding-roller L, with the front guide-rest having the arc-shaped recess therein located a distance from the end of said guide-rest equal to the length of the travelling carriage, as set forth. 4th. The combination, with the travelling carriage, of the spring-actuated guiding-roller L, the plate O and the front guide-rest, whereby the carriage is restored to its normal position on its return or recoil. 5th. The combination of the adjustable plates N' and O, the guide-rest D having arc-shaped recess N, the spring-actuated roller L and the travelling carriage provided with roller X, as described. 6th. The combination of the adjustable plates N' and O, the front guide-rest provided with arc-shaped recess N, the spring-actuated roller L journaled on sill H, the roller X, the travelling carriage, and the cord and weight for reversing said carriage when it reaches terminus of line, substantially as described. 7th. The combination of the travelling carriage and guide-roller X with the front guide-rest having arc-shaped recess N, the adjustable plates N' and O, the roller L journaled on shaft m, the spring M' and the collar M, as described. 8th. An electro-magnetic step-by-step motor for advancing the travelling carriage, in combination with the rack-bar of said carriage, the front guide rest provided with arc-shaped recess N, the adjustable plate N', the spring-actuated guiding roller L, the roller X and the cord-weight, substantially as specified. 9th. The combination of the cord and weight and the guiding-pulleys therefor, with the travelling carriage, and means for elevating the said carriage upon an inclined plane when it reaches end of line, and the spring-actuated reversing-roller journaled upon an end sill of said carriage, and adapted to impinge against the front guide-rest while advancing, and designed to slip through the recess N and upon the top of said guide-rest on return, substantially as specified. 10th. The combination of the carriage and guide rest and the spring-actuated reversing-roller, with the adjustable plate secured upon front guide-rest at beginning of line, whereby the said roller on its return is automatically thrown down, so as to impinge against the side of the guide-rest ready for the advance of next line. 11th. The combination of the roller L and guide-rest D, having the arc-shaped recess N, the adjustable plate N' and the roller X, as set forth. 12th. The combination of the weight and cord with the travelling carriage, the spring-actuated reversing roller, the adjustable plate N', the front guide-rest having the arc-shaped recess N, and the roller X, properly located thereon, as described. 13th. The combination of the travelling carriage, the front guide-rest provided with the arc-shaped recess, and the adjustable spring-actuated roller L adapted to impinge against the side of said guide-rest while the carriage is advancing, and designed to be pushed through recess N by agency of spring M' on top of the guide-rest D when carriage reaches end of line, the adjustable spring M' and the projecting shaft m'. 14th. The combination of travelling carriage, the travelling magnet mounted on framework of carriage, the spring circuit closer, the contact-plate I, the rod 3 and 3' the circuit, as described. 15th. The combination, with the travelling carriage, of the pawl-and-ratchet mechanism on end of paper-roll, the plate W, standard U, armature T, the adjustable screw Y, retracting spring Z, the arm S, the travelling magnet I, bracket Z, spring circuit-closer z, the travelling contact plate I, the longitudinal rod 3, the bevelled plate 13 and the circuit and battery, as set forth. 16th. The combination, with the travelling carriage, its rack-bar, armature, lever, pawl and actuating electro magnets, of the roller and incline, whereby the forward end of the carriage is elevated when it has reached its forward limit, so as to place in position to return automatically to a normal position, substantially as specified. 17th. The combination, with the travelling carriage and the electro-magnet secured thereto and in circuit with a spacing-key of an armature lever and pawls, and the ratchet discs mounted on the shaft of the paper spacing roll, whereby the same may be actuated to move the paper so as to space the lines thereon, substantially as specified.

No. 28,475. Tool-Holder. (Porte-outil.)

Charles Francis, New Brunswick, N.J., U.S., 6th February, 1888; 5 years.

Claim.—1st. The tool-holder or stock A having a bore a, a counter-

boro *a*, a slit *a*¹¹ and a clamping-screw *a*¹¹¹, in combination with the bush *C*, of the proper size to fit into said counterbore *a* and having an aperture for the passage of the tool, and a slit *c*, substantially as set forth. 2nd. The combination of the tool-holder *A* having a longitudinal cylindrical bore *a*, a cylindrical counterbore *a*¹, a slit *a*¹¹, and a clamping-screw *a*¹¹¹, with a circular bush *C* fitting into said counterbore *a*, and having an oblong rectangular aperture to receive the tool, and a slit *c* to permit the bush to clamp on the tool, the diameter of the bore *a* being equal to the longest dimension of the aperture in the bush *C*. 3rd. The tool-holder or stock *A* having a bore *a*, a counterbore *a*¹, slits *a*¹¹ and *a*¹¹¹, and clamping-screws *a*¹¹¹ and *a*¹¹¹¹, in combination with the bush *C* made to fit into said counterbore *a* and having a rectangular aperture for the passage of the tool, and a slit *c*, substantially as set forth. 4th. The combination of the tool-holder or stock *A* having a bore, counterbore, slits and clamping screws, substantially as described, the bush *C* having an aperture for the passage of the tool, and a slit to permit of its clamping on the body of the tool, and the back-stop to prevent the tool from being pushed back into the holder. 5th. The combination, with the tool-holder *A* having a bore *a*, a counterbore *a*¹, slits *a*¹¹ and *a*¹¹¹ and clamping screws *a*¹¹¹ and *a*¹¹¹¹, arranged as shown, of a clamping-bush *C*, as described, constructed to fit in the counterbore *a*¹, a tool with a cylindrical shank fitting the bore *a* and provided with a nick in its butt, and a flange bar forming a back-stop for said tool clamped in the bore *a*, and its end or butt *d* engaging the nick in the tool-shank, substantially as set forth. 6th. The tool-holder *A* having a thread gage formed on its lower edge or face at *e*, substantially as set forth. 7th. The tool-holder *A* having a V-shaped thread-gage *g* formed in its lower edge or face, substantially as set forth. 8th. The back-stop *D* provided with a thread-gage *h*, as set forth.

No. 28,476. Churn. (*Baratte*.)

Eugene S. Gibbs, Lyons, Iowa, U.S., 6th February, 1888; 5 years.

Claim.—The combination, with the churn having the rotating beaters, of the breakers pivoted to one side of the churn, and the locking pins or bolts *U* to secure the said breakers at any desired inclination with relation to the level surface of the cream, substantially as described.

No. 28,477. Plant Protector.

(*Protecteur de plante*.)

William R. Hallock, Bradentown, Fla., U.S., 6th February, 1888; 5 years.

Claim.—1st. A plant protector consisting of a conical shell having a band secured around its base, said band occupying a vertical position with respect to said shell so as to leave an annular space or recess, and a filling material in said recess, substantially as set forth. 2nd. In a plant protector, the conical shell having a band secured around its base, said band occupying a vertical position and being tapered on its inner side, and leaving an annular recess or space between the band and the shell, filling material in said recess or space, the lower edge of the band being sharpened to thereby more readily enter the ground, and the upper edge of the band being set away from the shell to form an enlarged bearing, as set forth.

No. 28,478. Cigar Box or Case. (*Boîte à cigares*.)

Eugene Vallens, Chicago, Ill., U.S., 6th February, 1888; 5 years.

Claim.—1st. A cigar box provided with sides cushioned on their inner surface, to afford a slightly yielding contact with the ends of the cigars and protect them from injury, substantially as described. 2nd. The combination of a cigar box and a contractile and extensible cigar-holder, movable within the box and against the cigars remaining therein after the removal of some, whereby they may be held in place and prevented from jostling and rolling, substantially as described. 3rd. The combination of a cigar box provided with sides cushioned on their inner surface, to afford a slightly yielding contact with the ends of the cigars and protect them from injury, and a contractile and extensible cigar-holder movable within the box and against the cigars remaining therein after the removal of some, and with its pointed ends forced into the cushion, whereby the cigars may be held in place and prevented from jostling and rolling, substantially as described.

No. 28,479. Egg Tray Machine.

(*Machine à faire les boîtes à œufs*.)

Gustav L. Jaeger, New York, N. Y., U. S., 6th February, 1888; 5 years.

Claim.—1st. The combination, with the feeding-roller *76*, of the device for stopping its movements consisting of the cams *83*, *84* and *85* on gear-wheel *F*, and lever *89* for lifting the driving-pawl *103* out of engagement with the ratchet *108*, substantially as described. 2nd. The combination, with the platforms *X*, single chain *40*, and means, substantially as described, for giving a quarter-turn to the platforms, of the catch-plates *W*, substantially as described. 3rd. The dischargers *55* upon the rock-shaft *R*, in combination with the cam *56* and pin *58* on spur-wheel *F*, substantially as specified. 4th. In combination with the dischargers *55*, the central discharging-bar *7* supported by strips *4*, which strips project beyond the platform so as to be acted upon by the dischargers *55*, and springs *6* secured to the platform and to the strips *4*, substantially as specified. 5th. In an egg-tray machine, the combination of the platforms *X* movable regularly onward with a step-by-step motion, with mechanism, substantially as described, for cutting, preparing and loading the strips of material, the feeding mechanism for the strips being interrupted at fixed intervals while the movements of the platforms proceed, for the purposes set forth.

No. 28,480. Roasting and Treating Coffee, etc. (*Torréfaction et traitement du café, etc.*)

Le Turco DesRosiers, Paris, France, 6th February, 1888; 5 years.

Claim.—1st. In the process of roasting and treating coffee berries, cacao beans, and the like, in which the vapours are collected and condensed, the method of treatment herein described, which consists in causing the vapours and aromas which escape from the roasted coffee to be reasimilated after being condensed in any suitable apparatus provided with a cook, at which the products of condensation are drawn off in the open air, and serving also to indicate the maximum temperature at which the roasting operation should be conducted, substantially as specified. 2nd. The herein described process of treating coffee berries cacao beans, and other similar products, which consists in impregnating them with the liquid obtained by the condensation of the aroma and vapours which escape during the roasting, this operation being effected by injecting said liquid into an apparatus provided with rotary stirrers, so as to ensure a uniform distribution of the liquid among the berries and over their whole surface, as specified.

No. 28,481. Adjustable Button for Pants.

(*Bouton-agrafe pour pantalons*.)

Henry Thorn, Rochester, Ont., 6th February, 1888; 5 years.

Claim.—1st. The combination of two plates *A* and *B*, fitted together from their centro by an adjustable screw *F*, and provided with stationary button *E* from which hangs front plate *A*, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of two curved plates *A* and *B* with tightening screw *F* and button *E*, the whole substantially as and for the purpose hereinbefore set forth.

No. 28,482. Manufacture of Illuminating Gas and Apparatus therefor.

(*Fabrication du gaz d'éclairage et appareil pour cet objet*.)

John H. R. Dinsmore, Liverpool, Eng., 6th February, 1888; 5 years.

Claim.—1st. In the manufacture of illuminating gas from coal, rendering the tarry or heavy vapours evolved from the coal, permanent, by apparatus consisting of a retort *A* and a duct or ducts *B*, in the form of a return or double pipe or pipes, constructed substantially as herein set forth. 2nd. In the manufacture of illuminating gas from coal, rendering the tarry or heavy vapours evolved from the coal, permanent, by apparatus consisting essentially of a main retort *A*, a duct *B* and a cooling jacket *b*, through which a cooling fluid is passed, as or substantially as herein set forth. 3rd. In the manufacture of illuminating gas, passing the gas made in the retort through a cooled passage or passages (such as *b*) and heated ducts (such as *B*), as or substantially as and for the purposes set forth. 4th. The combination of the retort *A*, duct *B* and cooled mouth *b*, substantially as set forth, with reference to the drawings. 5th. The combination of parts consisting of the retort *A*, duct *B* and a cooled passage or passages *b*, substantially as set forth with reference to the drawings. 6th. In the manufacture of illuminating gas from coal, effecting the automatic regulating of the depth of washing by apparatus consisting essentially of floating trays *K* having weirs *k*, operating as or substantially as set forth.

No. 28,483. Appliance for Spacing or "Fanning Out" Envelope Blanks and Sheets of Paper for Gunning or Bordering.

(*Appareil pour faire glisser les ébauches d'enveloppes et les feuilles de papier pour appliquer la colle ou border*.)

William C. Pellatt, Brooklyn, Eng., 6th February, 1888; 5 years.

Claim.—1st. The arrangement of appliances shown on the annexed drawings for fanning or spacing out envelope blanks, postal wrappers, note paper and the like, to prepare said blanks for the gunning or bordering operation, which may be effected mechanically or by hand, as set forth. 2nd. The employment of stacked porphyry rollers, as a support to a pile of blanks, and as a separator of the bottom blanks of the pile in succession, for "fanning out" or "spacing" sheets of paper, envelope blanks and the like, as and for the purpose described.

No. 28,484. Rail Drill. (*Foret pour rails*.)

Merritt W. Smith, Waverly, N. Y., U. S., 7th February, 1888; 5 years.

Claim.—The combination, in a rail-drilling machine, of a supporting frame, constructed substantially as shown, so as to provide space between the sides thereof, said frame supporting a shaft having a cog wheel and a fly-wheel, an intermediate gear-wheel supported by one of said side pieces, and a nut rigidly mounted on a shaft carrying a drill socket, a threaded sleeve carrying a lever *J*, which is located between the side pieces, for moving the drill-carrying shaft to and from the frame, the parts being organized substantially as shown and for the purpose set forth. 2nd. In a drilling device, the side pieces *A* rigidly secured to each other, and provided with shafts *C* and *F* carrying cog wheels, a sliding pinion *L*, rigidly attached to shaft *K*, which carries the bit, a hollow sleeve which carries the bit, a hollow sleeve which is externally screw-threaded, said sleeve engaging with the screw-threaded perforations in the frame, and a lever for turning said screw-threaded sleeve, said lever being mounted on a sleeve between the side pieces of the frame, substantially as shown and for the purposes set forth. 3rd. In a drilling machine for the purpose set forth, the externally screw-threaded sleeve *H*, having a flange *I*, a notched wheel *J*, a lever *J* pivotally secured to said sleeve and provided with a sliding pawl, which is adapted to engage with said notched wheel, substantially as shown and for the purpose specified. 4th. In combination with a drilling machine, constructed substantially as shown, bolt plate *m* attached to one of said side pieces and provided with bolts *n*, for pivotally attaching hooked arms *N* thereto, substantially as shown and for the purpose set forth.

No. 28,485. Heating Drum. (Poêle sourd.)

John W. Yates, Bourbon, Ind., U.S., 7th February, 1888; 5 years.

Claim.—1st. The combination in a heating drum, of the central body A, plates B, C secured to the ends thereof, and having the openings B, C, to receive the body A and small aligned openings b, c, therein, flues D secured at the ends in the said aligned openings b, c, conical caps E, G secured to the said plates, pipe H to enter the lower cap G, and pipe I secured at the lower end in the cap E, substantially as described. 2nd. In a heating drum, the body A, flues D and caps E, G, having plates B, C, the said body A and the flues D being secured at their inner ends in the plates B, C, whereby the flues, the body and the caps are all connected together, the conducting pipes H, I connected with the said caps, and the vertically movable pipe I, within the body A and below the pipe I, combined with the lever O pivoted to body A and connected at its inner end to the pipe I, as set forth. 3rd. In a heating drum, the body A having a vertical slot M in its side, flues D and caps E, G, having plates B, C, the said body A and flues D being secured at their inner ends in the plates B, C, whereby the caps, the body and the flues are all connected together, the conducting pipes H, I, connected to the caps, the movable pipe I, below the pipe I and within the body A, and the bar K connected to the pipe I, and having a central aperture L, combined with the lever O, mounted in the slot M, and having a pin to pass on its inner end engaged in the aperture L, and the hook or locking arm S mounted on the outer end of the lever and adapted to engage a keeper on the drum, substantially as specified. 4th. In a heating drum, the body A having a slot M in its side, flues D, caps E, G, having plates B, C, the said body A and flues D, being secured at their ends in the said plates, the conductor pipes H and I communicating with the caps, and the movable pipe I, within the body A, combined with the tapering guide bracket N, secured to the side of the body A and communicating with the slot M, and the lever O mounted at the inner and smaller end of the bracket N, and having a disc which closes the opening in the same, the inner end of the lever being connected to the movable pipe I, while the outer end projects beyond the side of the body A, substantially as specified. 5th. In a heating drum, the body A closed at one end, the flues D, the caps E, G, having plates B, C, the said body and flues D being secured at their inner ends in the plates B, C, whereby the caps, the body and the flues are all connected together, the conducting pipes H, I connected to the caps, combined with the movable pipe I moving in the open end of the body A, and, when raised, closing communication between the cap E and the pipe I, whereby the smoke and gases escaping from the pipes or flues D into the caps are caused to descend through the body and pass out through the pipe I, as set forth. 6th. In a heating drum, the central tubular body A combined with the flues D exposed on all sides and arranged around the central body, the plates B, C connected to the ends of the flues D and the body A, the caps E, G, connected to the plates B, C, the ends of the flues D being open, so as to communicate with the interior of the caps, the conducting pipes H, I, connected to the caps E, G, and the closing device, substantially as described, to close communication between the cap E and its pipe H, substantially as specified. 7th. In a heating drum, the combination of the central body, the caps at the ends of the body, the conductor pipes communicating with the caps, and the elliptical flues D arranged around the central body and communicating at their ends with the said cap, substantially as specified.

No. 28,486. Barn Door Fastener.

(Fermeture de porte de grange.)

Joseph A. A. Miller, Bridgewater, N.S., 7th February, 1888; 5 years.

Claim.—1st. The combination of the vertical bar F, pivoted at the centre to a door, rains or catches G secured to the door, and catches I, J, secured to the floor and lintel respectively, as set forth. 2nd. The combination, with a door, of the vertical bar F, pivot pin H and catches J, I, secured to the lintel and floor respectively, as set forth.

No. 28,487. Cash Register. (Compte-monnaie.)

William C. McGill, Washington, D. C., U. S., 7th February, 1888; 5 years.

Claim.—1st. In combination with a cash receptacle, the two series of plates pivoted in a line at right angles with the face of the machine, having each a downward projecting stem and marked with numbers corresponding to the numbers on the registers, the two shafts I and J having the semicircular plates R, R, having attached to their outer edges the ribs corresponding in number to the number of the pivoted plates, and the registering drums T, the whole arranged to operate substantially as herein set forth. 2nd. In combination with a cash receptacle, the pivoted plates formed with the projecting stems O and O', the geared levers Q having at their outer ends the ribs, for the purpose of returning the said pivoted plates to their normal positions, substantially as set forth. 3rd. In combination with a cash receptacle, the two series of pivoted plates formed with the projecting stems O and O', the two shafts I and J having the semicircular plates R, R, having attached to their edges the ribs corresponding in number to the number of the pivoted plates, and the geared levers Q having at their outer ends the rods, for the purpose of returning the said pivoted plates to their normal positions, substantially as set forth. 4th. In combination with a cash receptacle, the two series of pivoted plates formed with the projecting stems O and O', the two shafts I and J having the semicircular plates R, R, having attached to their edges the ribs corresponding in number to the number of the pivoted plates, the geared levers Q having at their outer ends the rods, for the purpose of returning the said pivoted plates to their normal positions, and the registering drums T. 5th. The combination, with the spring-actuated drawer having the lug of the spring actuated sliding lock plate, having the arm extending at right angles, the auxiliary arm carrying the clapper and the end lugs, the bell and the plates secured to the shafts, and having the lower lug engaging the said pawls. 6th. In a cash register, the combination, with a series of plates pivoted in a line at right angles with the front of the machine, each having a number for the purpose of showing the amount registered, and formed with the

downwardly projecting stems, of a series of projections, rods or plates corresponding to the number of pivoted plates, the pivoted levers having the projecting arms and lugs, and the spring pawls, arranged as described, to actuate the said levers. 7th. In a cash register, the combination, with a series of plates pivoted in a line at right angles with the front of the machine, each having a number for the purpose of showing the amount registered, and formed with the downwardly projecting stems, of a series of projections, rods or plates corresponding to the number of pivoted plates, the pivoted hinged levers, having the projecting arms and lugs, the spring pawls, arranged as described, to actuate the said levers, and the thumb lever to throw the spring pawl out of engagement. 8th. In a cash register, the combination, with the cash having the front scales, as described, and the shafts having the index hands, of the series of plates pivoted in a line at right angles with the front of the machine, each having a number for showing the amount registered and formed with the downwardly extending stems, the series of projections, rods or plates corresponding to the number of pivoted plates, the loosely mounted registering drums having the equidistant spokes, the pivoted hinged levers, having the projecting arms and lugs, the spring pawls, arranged as described, to actuate the said levers and the spring hook, the thumb-lever and the intermediate levers and pawls arranged as described, as set forth. 9th. The combination, with the transverse shafts and the gear wheels mounted thereon, of the central disk having one half only of its periphery formed with teeth, and the key for operating the said disk, substantially as set forth. 10th. The combination of the transverse shafts and the gear wheels mounted thereon, of the central disk, having one half only of its periphery formed with teeth, the central dial, marked as described, with the two scales, and single key having the index hand, and having the cam on its inner end, and the locking plate having the bevelled projection, and the drawer band casing A. 11th. The combination, with the central disk, having one half only of its periphery formed with teeth, and the key for operating the same, of the shafts having mounted on them the gear wheels and the notched plates, and the series of pivoted indicator plates, substantially as set forth.

No. 28,488. Fence. (Clôture)

Basil Miller, West Lafayette, Ohio, U. S., 7th February, 1888; 5 years.

Claim.—The herein described fence, composed of the posts A, provided in their upper ends with the slots a, and in their corresponding sides near their lower ends with the notches B, the flexible fence wires C, C, the former detachably held in the slots a, by means of the staples c, and the latter detachably held in the notches B by means of the staples D, the pickets strung on the upper and lower wires by means of the staples p, q, respectively, so that the fence can give a shock without displacement, the inclined brace bars E having their lower ends resting upon the surface of the earth, the staples e secured in the upper ends of said brace bars, and embracing the upper fence wire C, so as to prevent accidental detachment of the brace bars therefrom, the staples f secured to the sides of the brace-bars, and the rods F, connecting said staples f and the lower fence rods, substantially as specified.

No. 28,489. Splicing Lumber. (Enture des bois.)

William L. Earing, Brockville, Ont., 7th February, 1888; 5 years.

Claim.—1st. The improvement in the art of splicing lumber, which consists in slatting the pieces to be joined lengthwise from the end, the intervening tenons parallel and slightly exceeding the slots in width, bevelling or rounding the ends of the slots and tenons to coincide, cementing the contact edges of the joint and driving the pieces endwise together, whereby the tenons will be compressed laterally together, and the bevelled or rounded ends crush into the bevelled or rounded ends of the slots throughout the whole thickness of stuff, to make an almost imperceptible and practically unbreakable joint, as set forth. 2nd. A joint or splice formed by slots D and tenons C cut endwise in pieces of board to be joined, the tenons bevelled or half round at the points, and the slots bevelled or half round at the ends, the tenons having parallel walls for a portion of their length and slightly exceeding the slots in width, the joint glued and the pieces driven endwise together, as set forth.

No. 28,490. Laying-Out Attachment for Mortising Machines. (Appareil à tracer pour machines à mortaiser.)

Henry M. Bullis, Traverso, Mich., U.S., 7th February, 1888; 5 years.

Claim.—1st. In a laying-out attachment for mortising-machines, the combination, with a stationary bed provided with an upwardly projecting lug, of a carriage travelling on the said bed and provided with a longitudinal groove, graduated strips in said groove, and blocks secured to the strips and adjustably connected together, substantially as described. 2nd. In a laying-out attachment for mortising-machines, the combination, with a stationary bed provided with an upwardly projecting lug, of a carriage sliding on the bed, graduated strips held to the carriage, blocks secured to the said strips and adjustably connected together, and rests adjustably secured to the said strips, substantially as described. 3rd. In a laying-out attachment for mortising-machines, the combination, with a bed secured to the table of the mortising-machine, rollers held on said bed, and a lug secured to the rear of said bed, of a carriage travelling on said rollers, gauge-strips held adjustably on said carriage, and blocks held on said gauge-strips and engaging alternately said lug on the bed, substantially as shown and described. 4th. In a laying-out attachment for mortising-machines, the combination, with a bed secured to the table of the mortising-machine, rollers held on said bed, and a lug secured to the rear of said bed, of a carriage travelling on said rollers, graduated dovetailed gauge-strips L held adjustably on rear of said carriage, blocks held on said gauge-strip and engaging alternately said lug on the bed, and rests mounted adjustably on said carriage, substantially as shown and described. 5th. In a laying-out attachment for mortising-machines, the combination, with a sliding carriage, of blocks adapted to slide on said carriage, a screw-rod con-

necting said block to each other, and a rule secured by one end to one of said blocks, its other end extending to and beyond said other block, to indicate the stroke of the carriage, substantially as shown and described. 6th. In a laying-out attachment for mortising-machines, the combination, with a carriage provided on the rear near each end with a graduated dovetailed strip, of an L-shaped block held adjustably on said dovetailed strip, and a rest mounted on said block, substantially as shown and described. 7th. In a laying-out attachment for mortising-machines, the fixed bed B secured to the table of the mortising-machine, the rollers C mounted on said bed B, and the lug K held on the rear of said bed B, in combination with the carriage D travelling on said rollers C, and provided with the dovetail E engaging a corresponding groove in the end walls B, and the partitions B' of said bed, the handle F attached to the front of said carriage D, for moving said carriage forward and backward, and the adjustable blocks G and G' secured to the carriage D and striking alternately against said lug K substantially as shown and described. 8th. In a laying-out attachment for mortising-machines, the bed B, the rollers C mounted in said bed and the lug K held on the rear of said bed, in combination with the carriage D, the blocks G and G' held adjustably on said carriage D, and the screw-rod I for adjusting said blocks G and G', substantially as shown and described. 9th. In a laying-out attachment for mortising-machines, the bed B, the rollers C mounted in said bed, and the lug K held on the rear of said bed, in combination with the carriage D, the blocks G and G' held adjustably on said carriage D, the screw-rod I for adjusting said blocks G and G', and the rule J secured by one end to said block G' and extending over to and beyond the other block G, and adapted to indicate the stroke of the carriage D, substantially as shown and described. 10th. In a laying-out attachment for mortising-machines, the carriage D, the graduated dovetailed strips P and the adjustable rests Q held on said carriage D, in combination with the blocks G held adjustably in said graduated strips P and the beam S pivotally connected with said block Q, substantially as shown and described.

No. 28,491. Fire-Place Heater.

(Calorifere de cheminée)

Harry B. Gleason and William H. H. Clague, Rochester, N.Y., U.S., 7th February, 1888; 5 years.

Claim.—1st. A water fire-box for a fire-place heater, said fire-box mainly below the level of the floor of the room in which the fire-place is located, and surrounding the fire-pot on all sides, as shown, and described. 2nd. An open fire-place heater having its walls composed of hollow sections to contain water, said sections being connected by exterior pipes and having passages between them for smoke, etc., substantially as described. 3rd. The combination, in a fire-place heater, of a series of horizontal water sections, each section having smoke passages formed by depressions in its shell, and having depressions in its rear surface which, in connection with the inclosing-casing, constitute smoke-flues, as set forth. 4th. The combination, in an open fire-place heater, of a water fire-box and water sections constituting the sides and back of the heater, said fire-box and back sections being connected together by a system of circulating pipes, substantially as described. 5th. An open fire-place heater having a parabolic water-back composed of independent sections having smoke-passages between the same, substantially as described. 6th. A fire-place heater having a water-back and an air heating chamber, and smoke-flues which pass first through the water-back and are continued in contact with the air chamber, the combination being and operating substantially as described. 7th. The water-back sections having depressions in their rear surfaces, in combination with the air heating chamber bearing against said sections, so that the depressions form smoke flues, substantially as described. 8th. The combination, with a fire-place heater having a chute leading into the fire-pot, of a lift in proximity to, and opening into said chute. 9th. The combination, with an open fire-place heater having a side chute, of an elevator-passage leading from a lower floor to the level of the fire-place, a coal lift and mechanism, substantially as described, by which the lift may be raised and lowered, as set forth. 10th. In combination with a fire-place heater having a chute leading to the fire-pot, an elevator passage in proximity thereto, a lift in the passage, and a hinged piece on the lift, which piece forms a continuation of the chute when open, as set forth. 11th. In combination with a fire-place heater having an ash-pit below the floor of the room in which the heater is located, a coal elevator in proximity to said ash-pit, both elevator and ash-pit opening into the basement or lower floor, as set forth. 12th. In combination with a fire-place heater having a chute and a coal elevator communicating therewith, an exhauster in the chute by which the coal-supply may be regulated. 13th. The combination, with a fire-place heater having a sunken fire-pot, of a grate, and levers connected with the grate extending both above and below the floor. 14th. In combination with the fire-pot, the cast sections constituting the water-back, each section having arched passages through its bottom and flat on top, whereby the flat top of one section forms the bottom or floor of the arched passages in the next higher section, the sections being connected by external pipes, substantially as shown and described. 15th. The cast sections constituting the water-back, the sections having arched passages from front to rear, as set forth, and having depressed flues in the rear portion, the depressions in adjacent sections alternately inclined from right to left and from left to right, substantially as set forth.

No. 28,492. Hay Fork. (Fourche à foin.)

Charles W. Robertson, Fond du Lac, Wis., U.S., 7th February, 1888, 5 years.

Claim.—1st. A hay-fork consisting, substantially as before set forth, of two curved arms or hooks pivoted together at one end, and terminating at the other end in the arms *r*, the distance between the pivot and points *s* being less than the distance between said pivot and the points *j*, whereby a lifting action exerted at the pivot will tend to close the arms and force a load held between the points of the hooks down the inclined curves toward points *j*. 2nd. In combination with the arms A and B, the link C, chain p, the lifting rope pro-

vided with the eye or ring, the latch *d* and the finger *e*, the latter being provided, as shown, with the friction-spring, whereby it is retained in engagement with the latch.

No. 28,493. Tenoning Machine.

(Machine à tenons.)

William L. Earing, Brockville, Ont., 7th February, 1888; 5 years.

Claim.—1st. In a tenoning machine, the combination of two gangs of rotary cutters, one above the other, the alternating cutters of both gangs of greater diameter than the intermediate cutters, whereby the lower gang cuts the tenons, and the upper gang trims the same, as set forth. 2nd. The combination, in a tenoning machine, of two gangs of rotary cutters, one above the other, the alternating cutters of both gangs of greater diameter than the intermediate cutters, each gang having a series of hook-shaped teeth, whose cutting faces are collectively in the same radial or tangential plane, whereby the teeth of a series may be sharpened collectively, as set forth. 3rd. In a tenoning machine the combination of one or more rotary gangs of cutters, the alternating cutters of greater diameter than the intermediate cutters, and a feed-table reciprocated vertically in front of the cutters, as and for the purpose set forth.

No. 28,494. Lift Pump. (Pompe élévatrice)

George W. Clark, Iroquois, Ont., 7th February, 1888; 5 years.

Claim.—1st. The combination, with the pump tube B and tubular cylinders A, A', each provided with a check valve, of the inwardly valved tubular cylinders E and F, pump rods G, G' and lever H, for the purpose set forth. 2nd. In a pump, the induction pipe L entering the pump tube B, above the cylinders A, A', and provided with a check valve, whereby a flow of water is induced through the pipe by suction of water passing upwardly in the pump tube, to increase the delivery of water in excess of the quantity passing through the cylinders, as set forth. 3rd. The combination of the pump tube B having a jointed neck, and lever H secured on the male screw section, as set forth.

No. 28,495. Grain Cleaning and Separating Mill. (Tareuse-crabeur.)

Moritz Grollmund, Fergus Falls, Minn., U.S., 7th February, 1888; 5 years.

Claim.—The combination of a shoe having an opening *i* in one side, a series of sieves *a*, *a*', *a*'', one above another in said shoe, a spout H secured at the lower end of said sieves and adapted to receive the tailings from all of them, a removable spout A' at the lower end of the uppermost of said sieves and projecting over said spout H, and a removable cross-piece E adapted to be diagonally inserted between two of the lower sieves, substantially as set forth.

No. 28,496. Apparatus for Applying Sand to the Driving Wheels of Locomotives. (Appareil pour distribuer le sable aux roues motrices des locomotives.)

James Gresham, Salford, Eng., 7th February, 1888; 5 years.

Claim.—1st. The combination, with steam ejectors for applying sand to the driving wheels of locomotives of the steam cock with channels, and a pipe for conveying away leaking steam or condensed steam, or drip from the steam cock, and preventing such steam or drip from passing to the ejector, substantially as described. 2nd. The combination of sand trap formed by the pins *d*, partition *d*, hollow screw-nut *d*', passage *d*' and screw-plug *d*'', substantially as and for the purpose described and illustrated by the drawings. 3rd. The combination of steam, air and sand ejector formed with a jet pipe for steam, a passage for air and sand from a sand trap, and a nozzle for steam, air and sand, and also provided with an outlet *b*, for sand to escape after the steam jet ceases, as hereinbefore described and illustrated by the drawings. 4th. The combination of a steam cock constructed with a drip pipe *a*', the sand trap *d*, where a current of air has to strike against the surface of the sand in the trap, to remove and carry the sand over a partition *d*, and the steam ejector *b* for producing the current of air and propelling the air, sand and steam against locomotive driving wheels and the rails, substantially as hereinbefore described.

No. 28,497. Widened Tubular Knit Fabric.

(Tricot circulaire élargi.)

William Esty, Laconia, N.H., U.S., 8th February, 1888; 15 years.

Claim.—1st. A widened tubular fabric having the seam in that portion where the widening is done, composed of a series of repetitions of one or more courses of crossed yarns, as *d*, *d*', and a plurality of loops upon each side of the centre of said seam drawn from a course below, over and above said first-mentioned courses, and knit into a course above at each widening, one of said loops upon each side of the seam increasing the number of stitches in said course and widening the fabric. 2nd. The method of knitting a widened tubular fabric with two yarns or two distinct sets of needles, which consists in throwing into action of new needles at one end of each row of needles, at the same time that the needle next to said new needles is thrown out of action, still holding the loop thereon, knitting one or more courses with two yarns fed in opposite directions, and throwing out of action the last needles thrown in and at the same time throwing into action the needles last previously thrown out of action, knitting the loops carried by said last-mentioned needles into a succeeding course, knitting one or more courses and then throwing into action the new needles previously thrown in, to reize the yarn and then throw out again, and knitting the loops carried by said new needles into a succeeding course, thus increasing the number of stitches in the course and widening the fabric, and repeating said operations until the widening is completed.

No. 28,498. Widened Tubular Knit Fabric.*(Tricot circulaire inégale.)*

William Esty, Laconia, N. H., U.S., 8th February, 1888. 15 years.

Claim.—1st. A widened tubular knit fabric having the seam, in that portion where the widening is done, composed of a series of repetitions of one or more courses, of a yarn extending continuously in one direction, as *d, d*, and a plurality of loops upon each side of the centre of said seam, drawn from a course below, over and above said first-mentioned courses, and knit into a course above the same at each widening, one of said loops upon each side of the seam, increasing the number of stitches in the course into which it is knit, and widening the fabric.

No. 28,499. Grub and Stump Extractor.*(Arrache-souche.)*

John C. Sharp, Delavan, Wis., U.S., 8th February, 1888. 5 years.

Claim.—1st. In a grub and stump extractor, the combination of a main frame mounted upon the transverse runners 1 and 1, having their ends rounded, as shown, a draft-wheel mounted in said main frame, a draft-chain to move horizontally and in operative connection with said draft-wheel, means for anchoring said main frame, so that in operation the machine can swing laterally and freely upon the ground from its anchorage into line of draft with the variously located grubs and stumps, with which the outer portion of the horizontally extended draft-chain may be connected, mechanism for locking said draft-wheel to prevent its turning backward, and a horizontally operating lever pivotally connected with said draft-wheel, and in such manner that, without lifting said operating lever from the draft-wheel, it can be turned laterally over and beyond the horizontally extended draft-chain, when the said draft-wheel is locked, and said operating lever adapted to engage with and rotate said draft-wheel, when said draft-wheel is not locked, all substantially as described and for the purpose set forth. 2nd. In a grub and stump extractor, the bed-plate 3 mounted upon transverse runners 1 and 1, and having two studs 17 and 17, a central circular opening 5, with the circular platform 6 surrounding said opening, the top plate 18 secured to the bed-plate 3 by means of the two bolts 21 and 21, a chain-wheel adapted to rotate horizontally between the bed-plate 3 and top plate 18, said chain-wheel having a horizontal chain-guide box surrounding it, and said horizontal chain-guide box adapted to swing laterally within certain limits independently of the frame of the machine, and said horizontal chain-guide box having the supporting legs 27, 27, of the shape shown, and mechanism for locking the said chain-wheel, and an operating lever pivotally connected with said chain-wheel, so as to turn independently of the chain-wheel and adapted to engage with, and turn the chain-wheel when such result is desired, and means for anchoring said grub and stump extractor, all combined as above recited, substantially as and for the purpose set forth. 3rd. In a grub and stump extractor, the combination, with the bed-plate 3 and the top plate 18 secured together, of the horizontal chain-guide box with the hollow guide-arms 26, the anchor-bail 28, the anchor-chain 29, an operating lever with the lever socket 33, having a round shaft or shank 40 having several openings or holes 44, a chain-wheel with a central circular opening 41 in its hub, and said chain-wheel having several openings or holes 44 in its hub, and the pin 45, mechanism for locking said chain-wheel, when such result is desired, and a horizontal draft-chain, substantially as shown and described and for the purpose set forth. 4th. In a grub and stump extractor, the combination of the bed-plate 3 mounted upon the transverse runners 1 and 1, and having two studs 17 and 17, and a central circular opening 5, the top plate 18 secured to the bed-plate 3 by means of the two bolts 21 and 21, a chain-wheel adapted to rotate horizontally between the bed-plate 3 and the top plate 18, and surrounding said chain-wheel, a horizontal chain-guide box, having hollow guide-arms 26 and 26 projecting from its front portion, and said horizontal chain-guide box having the supporting legs 27, 27, of the shape shown, an anchor chain, an operating lever, a draft-chain and the locking-plate 50 applied to said draft-chain, substantially as shown and described and for the purpose set forth. 5th. In a grub and stump extractor, the combination, with the bed-plate 3 mounted upon the transverse runners 1 and 1, and having the central circular opening 5, in the circular platform 6, surrounding said opening, and having the studs 17 and 17, and the top plate 18 secured to said bed-plate 3, by means of the bolts 21 and 21, of a chain-wheel mounted between said top plate 18 and bed-plate 3, and a horizontal chain-guide box surrounding said chain-wheel, and adapted to swing laterally within certain limits around said chain-wheel, and independent of the frame of the machine, and said horizontal chain-guide box having the hollow guide-arms 26 projecting from its front and having the supporting legs 27 of the shape shown, a draft-chain and an anchor chain, substantially as described and shown and for the purpose set forth. 6th. In a grub and stump extractor, the combination, with the bed-plate 3 mounted upon the transverse runners 1 and 1, and having the two studs 17 and 17, and the central circular opening 5, in the circular platform 6 surrounding said opening, and the top plate 18 secured to said bed-plate 3 by means of the two bolts 21 and 21, of a chain-wheel adapted to rotate horizontally between said bed-plate 3 and top plate 18, the horizontal chain-guide box surrounding said chain-wheel and adapted to swing laterally around said chain-wheel a limited distance, independent of the frame of the machine, said horizontal chain-guide box

having the supporting legs 27 of the form shown, the hollow guide-arms 26 projecting from the front of the horizontal chain-guide box, and a chain-stripper plate mounted in said horizontal chain-guide box the anchor-bail 28, the anchor-chain 29, a draft-chain an operating lever and a side hitch chain, substantially as described and shown and for the purpose set forth. 8th. In a grub and stump extractor, the combination, with the bed-plate 3, mounted upon transverse runners 1 and 1, and having the two studs 17 and 17, and the central circular opening 5, with the circular platform 6 surrounding said opening, the top plate 18 and the bed-plate 3, secured together by means of the two bolts 21 and 21, of the horizontal chain-guide box surrounding a chain-wheel, and adapted to swing laterally a limited distance around said chain-wheel, between the bed-plate 3 and top plate 18, said horizontal chain-guide box, having a stripper-plate mounted therein, the hollow guide-arms 26 projecting from the front of said horizontal chain-guide box, and said chain-guide box having the supporting legs 27, of the form shown, an anchor-chain and operating lever, the anchor-bail 28, the anchor-chain 29, the low stump hook 54, having a clevis 56, said low stump hook connected with draft-chain, the pulley-block 62 connected with the draft-chain, as shown, and the hitch-chain 73, substantially as shown and described and for the purpose set forth. 9th. In a grub and stump extractor, the combination, with the bed-plate 3 mounted upon the transverse runners 1 and 1, and having the studs 17 and 17, and the central circular opening 5, in the circular platform 6 surrounding said opening, the top plate 18 and the bed-plate 3, secured together by means of the two bolts 21 and 21, of a chain-wheel adapted to rotate horizontally between the top plate 18 and the bed-plate 3, the horizontal chain-guide box surrounding said chain-wheel, and adapted to swing laterally a limited distance around said chain-wheel, independent of the frame of the machine, a chain-stripper plate mounted in said horizontal chain-guide box, the hollow guide-arms 26 projecting from the front of said horizontal chain-guide box, and said horizontal chain-guide box having the supporting legs 27 of the form shown, the anchor-bail 28, the anchor-chain 29, the pulley-block 62 connected with the draft-chain, as shown, the hitch-chain 73, the jack 33 connected with the hitch-chain 73, and the clevis 72 connected with said hitch-chain 73, substantially as described and shown and for the purpose set forth. 10th. In a grub and stump extractor, the combination, with a main frame mounted upon the transverse runners 1 and 1 having their ends rounded, as shown, of a draft-wheel mounted in said main frame, a draft-chain to move horizontally and in operative connection with said draft-wheel, means for anchoring said main frame, so that in operation the machine can swing laterally and freely upon the ground from its anchorage into line of draft with the variously located grubs and stumps, with which the outer portion of the horizontally extended draft-chain may be connected, mechanism for locking said draft-wheel to prevent its turning backward, a horizontal operating lever pivotally connected with said draft-wheel and in such manner that, without lifting the said operating lever from the draft-wheel, it can be turned laterally over and beyond the horizontally extended draft-chain, when the said draft-wheel is locked, and said operating lever adapted to engage with, and rotate the said draft-wheel, when said draft-wheel is not locked, and the jack 33 connected with the draft-chain, all substantially as shown and described and for the purpose set forth.

No. 28,500. System for Electrical Distribution. *(Système de distribution électrique.)*

Josiah M. Clokey, Decatur, Ill., U.S., 8th February, 1888. 5 years.

Claim.—1st. A conduit for electrical conductors, consisting of a pair of hollow uprights, each provided at intervals with openings or anchors, the uprights being held and braced by cross-pieces throughout their entire length at short intervals, the whole structure being adapted to be secured to the outer walls of a building, for the purpose described. 2nd. The herein described system of electrical distribution, which consists of a trunk conduit laid beneath the sidewalk close to the front wall of the buildings, in combination with a series of branch conduits connected with said trunk conduit and extending up in front of, and secured to the buildings, and provided with openings at intervals to allow branching of the wire, as described. 3rd. In a system of electrical distribution, a trunk conduit located on each side of the street, beneath the pavement, in close proximity to the building line, and at street crossings beneath the roadway, in combination with branches from said trunks extending upward and secured to the front of the buildings, some of the branches at opposite points on the street being further extended than the others, and having their upper ends connected by a truss or bridge, for the suspension of electric lamps and for conducting the wires to the same, substantially as described.

No. 28,501. Electric Accumulator, or other Primary or Secondary Galvanic Battery. *(Accumulateur électrique, ou batterie galvanique principale ou secondaire.)*

Camillo Desmazures, Paris, France, 8th February, 1888. 5 years.

Claim.—1st. The combination, in an accumulator, in which an alkaline liquid is employed, and even in any other primary or secondary batteries, of pure porous metal plates, whether platinum, silver, cobalt, copper, nickel, manganese, aluminium, iron, etc., substantially as above described. 2nd. Specially with regard to an accumulator, in which an alkaline liquid is employed, the combination, at the positive pole, of the plates *a, b*, of platinum, silver, cobalt, nickel, aluminium, manganese, copper, iron, etc., of pure and porous metal, more or less thick, according as it may be desired to charge more or less quickly. 3rd. Specially with regard to an accumulator, in which an alkaline liquid is used, the combination of parchment paper envelopes *d, d*, for said metal plates, when a metal is employed whose oxide might dissolve in the electrolyte. 4th. In an accumulator, in which an alkaline liquid is used, the combination, at the negative pole, of the plates *c, c*, of block tin, tinned iron, tinned wire, wrapped more or less closely round a tinned iron plate, according to the electric capacity to be given to the apparatus, or finally

tinned or galvanized wire gauzes. 5th. In an accumulator, in which an alkaline liquid is employed, the combination of the electrolytic liquid, composed of chlorate of soda, with zincate of soda or of potash, substantially as above described. 6th. In an accumulator, in which an alkaline liquid is used, the combination of the glass rods *e, e* and india rubber rings *f, f*, to connect and support the positives and negatives. 7th. In an accumulator, in which an alkaline liquid is used, the combination of the negative pole with the outer vessel, substantially as above described.

No. 28,502. Electric Circuit and Connection therefor. (*Circuit et raccordement de circuit électrique*)

John B. Wood, Montreal, Que., 8th February, 1888; 5 years.

Claim.—1st. In combination with an electric circuit, a rotating hand or connector, which can be started and stopped to form a connection between the wires *M* and *O*, and returned to zero, substantially as described. 2nd. The combination, in an automatic telephone exchange extending through a number of stations or locations, of a battery in circuit with magnets and rotating connectors, the opening and closing of the circuit operating the magnets which operate the rotating connector, which, upon being stopped, will operate a bell in connection with wire *U* and, upon taking off the telephone from the hooks *R*, will be placed out of circuit with the same, and placed into circuit with telephone transmitters, the whole substantially as described. 3rd. The combination, in an automatic telephone exchange, of a closed circuit extending through a number of stations or locations in connection, in each of which with a telephone instrument, consisting of a telephone receiver, hook and a transmitter magnets with their respective armatures, a mechanism containing a rotating hand or connector, a push button together with a call-bell upon wire *O*, the whole substantially as described. 4th. The combination, in an automatic telephone exchange, of a metallic circuit and a closed circuit extending through a number of stations or locations in connection, in each of which with the telephone instrument, consisting of a telephone receiver, a hook, a transmitter, magnets with their respective armatures, a mechanism containing a rotating hand or connector, a push button together with a call-bell upon wire *O*, the whole substantially as described. 5th. The combination, in an automatic telephone exchange, of a circuit wire extending through a number of stations or locations, each containing a telephone instrument and closed in a battery in one of such stations or locations together, with push button *D*, whereby the said battery may be used for signalling, and hook *R* whereby, on taking off the trumpet, the same battery will be used for telephone transmitter, the whole substantially as described.

No. 28,503. Knitting Machine.

(*Métier à tricoter.*)

William Esty, Laconia, N. H., U. S., 8th February, 1888, 15 years.

Claim.—1st. In combination with a knitting needle and a bar provided with a cam path for operating the same, the shifter *D* carrying the needle upon its upper side, the bar *Di* and a sustaining pattern cam for operating said bar, substantially as described. 2nd. In combination with a knitting needle and a bar provided with a cam path for operating the same, the needle shifter *D*, the bar *E*, the spring *d*, the drum *Ea*, a pattern chain composed of tags *Ez* mounted upon said drum, and the cam plates *Ea*, provided with throws *c* and shoulders *ci*, for operating said bar, substantially as described. 3rd. In combination with a knitting needle and a bar provided with a cam-path for operating the same, the partitions *C*, and supporting and securing means therefor, each partition having a portion thereof cut away, as at *c*, the needle *h* provided with a laterally projecting lug *h*, the needle shifter *D*, the bar *Di*, and a pattern cam for operating said bar, substantially as described. 4th. In combination with a knitting needle and a bar provided with a cam-path for operating the same, the needle shifter *D*, the bar *Di*, the spring *d* and the pattern cam plates *Ea* provided with throws *c* and shoulders *ci*, substantially as described. 5th. The combination, with the needles and the needle operating cam-bar, of a series of stationary hooked sinkers, cams for lowering and raising the hooked ends of the needles, as they are moved by the needle operating cams, to form the loops, said cams being constructed and arranged to depress said needles a given distance and immediately raise them again without holding them in said depressed position, and means having provision for lost motion, for operating the said needle, lowering and raising cams from the needle-operating cam bar, substantially as described. 6th. The combination, with the needles and the needle operating cam-bar, of a series of stationary hooked sinkers, the bars *h* and *s* pivoted together, as set forth, the pin or lug *s* and means having provision for lost motion, for operating said bars from the needle cam-bar, substantially as described. 7th. The combination, with a sustaining bar, a sinker plate grooved for the reception of sinkers, and a series of sinkers fitted to the grooves of the sinker plate and having shoulders or holding surfaces formed upon their shanks, a locking bar provided with shoulders or holding surfaces constructed and arranged to engage with the shoulders on all of said sinkers to lock them in position, and adapted to be withdrawn to permit the removal of one or all of said sinkers. 8th. The combination, with a sustaining bar, the grooved sinker plate and the sinkers provided with locking shoulders, of a locking bar provided with shoulders or holding surfaces constructed and arranged to engage with the shoulders on all of said sinkers and lock them all at the same height, and means for adjusting said bar in the direction of the length of said sinkers to regulate the height of said sinkers relative to the needles, substantially as described. 9th. The combination of fixed needle beds, two separate sets of needles arranged thereon at such an angle to, and distance from each other that the needles upon one set, when moved endwise, will cross the plane of movement of the other set, means for operating both sets of needles at the same time, a yarn carrier having a yarn guiding eye at each end thereof, and arranged above and oblique to said rows of needles, a pinion secured upon the shank of said yarn carrier, a rack-bar for engaging said pinion and arranged to be moved over the rows of needles therewith, stops for engaging said rack-bar at each end of

the reciprocation of the yarn carrier, and means for moving said yarn carrier and rack-bar from end to end of the rows of needles. 10th. The combination of fixed needle beds, two separate sets of needles arranged thereon at such an angle to, and distance from each other, that the needles in one set, when moved endwise, will cross the plane of movement of the other set, means for operating both sets of needles at the same time, a yarn carrier having a yarn-guiding eye at each end thereof and arranged obliquely to the rows of needles, a pinion secured upon the spindle of said yarn carrier, a rack-bar engaging with said pinion and arranged to be moved over the rows of needles therewith, means for moving said carriers and rack-bars from end to end of said rows of needles, and a movable stop arranged to be moved into the path of the rack-bar to cause the rotation of the yarn carrier or to be withdrawn from said path, substantially as described. 11th. The combination, with the spindle *l*, the yarn guiding eyes carried thereby, and the body of the spindle carrier, of means for locking said spindle and yarn guiding eyes in adjusted position, consisting of a fixed hub on the body of the carrier, a collar on the spindle, said hub and collar having corresponding inter-engaging points and recesses, and a spring for holding the collar pressed against the fixed hub, substantially as described. 12th. The combination, with the spindle *l*, the yarn guiding eyes and the body of the spindle carrier, of means for locking said spindle and yarn guiding eyes in adjusted position and raising the same momentarily during the turning thereof, consisting of a fixed hub or projection on the said spindle carrier, a collar on the spindle, said hub and collar having corresponding inter-engaging cam surfaces, and a spring for holding the collar pressed against the fixed hub, substantially as described. 13th. The combination, with the spindle *l*, the yarn guiding eyes carried thereby, and the body of the spindle carrier, of the fixed hub *h* and the collar *h*, said collar and hub being formed with the inter-engaging cam surfaces, as described, the spring *p* and the casing *N*, substantially as described. 14th. The combination, with the spindle *l*, the yarn guiding eyes carried thereby, and the body of the spindle carrier, of the pinion *o*, the two rack-bars *or* and *or* and a stop-pin *q* at each end of the traverse of said yarn guide, and constructed and arranged to be moved from the path of one rack-bar to the path of the other rack-bar, or out of the path of both rack-bars, as may be desired. 15th. The yarn carrier plate *m* provided with the shank or stem *h*, and an oblique hole in each end thereof, in combination with the plates *m*, *m*, each provided with a yarn guiding eye *n* and a shank or stem, and removably secured in one of the oblique holes in the plate *m*, as shown and described.

No. 28,504. Organ. (*Orgue*)

John W. Trainer, Fort Wayne, Ind., U. S., 8th February, 1888; 5 years.

Claim.—1st. In a reed organ, the combination, with the wind-chest having the lower horizontal part, the upper horizontal part and end connecting part with an open space surrounded by the said parts of the wind-chest, of the upper set or sets of reeds mounted above the upper of the wind-chest, the upper bank of keys mounted in the aforesaid open space, the key action mechanism situated behind and above the upper part of the wind-chest, the lower sets of reeds, the lower bank of keys mounted within the aforesaid open space, and the tracker devices behind the lower reed-cells, all of the reed cells opening in a direction away from the action mechanism, substantially as and for the purposes set forth. 2nd. In a reed organ, the combination, with the wind chest having the parts *A, B, C*, of the upper sets of reeds mounted above the part *B* of the wind chest, and having downwardly-opening valves, the upper bank of keys mounted in the space surrounded by the parts of the wind-chest, valve-levers above the part *B* of the wind chest, the lower sets of reeds and reed-cells, all opening away from the action mechanism and supported upon the lower part *A* of the wind-chest, the lower bank of keys and the tracker devices situated behind all of the lower reed-cells, substantially as set forth. 3rd. The combination, with the keys of the sets of reed cells arranged in several superposed series, the wind-chest *B* communicating with all of the said series, the tracker devices situated behind all of the aforesaid reed-cells, the latter all opening away from the action mechanism, the lower sets of reed-cells arranged in several superposed series, the lower wind-chest *A* connected with, and supporting the last said reed-cells, the latter all opening away from the action mechanism, substantially as described. 4th. The combination of the wind chest having parts *A, B, C*, the keys arranged within the space surrounded by the wind-chest, the reed-cells above the keys arranged in several superposed series, all communicating with the part *B* of the wind-chest, and all opening in a direction away from the action mechanism, and the sets of reeds below the keys arranged in several superposed series, all of the series of reeds communicating with the part *A* of the wind-chest, and all opening away from the action mechanism, substantially as described. 5th. In an organ having two banks of keys, the combination, with the wind-chest, of a two-part bellows mechanism, each part comprising an exhauster, the pedals *N* for operating one of the said exhausters, and means, as described, supplemental to the pedals for operating both of said exhausters simultaneously, said means being connected with the exhausters operated by the pedals, substantially as set forth. 6th. The combination, with the two-part bellows mechanism, each part comprising an exhauster, of the pedals connected with one of the exhausters, mechanism, substantially as described, for operating the other exhauster, and connecting devices attached to the last said exhauster and detachably connected with the first aforesaid exhauster, as set forth.

No. 28,505. Car-Coupling. (*Attelage de chars.*)

George Cushon, Hamilton, and Andrew M. LeBarro, Barton, Ont., 10th February, 1888, 5 years.

Claim.—1st. A car-coupling in which the gripping surfaces of the point-headed hooks *A* are formed respectively concave, or a segment of a circle from the centre of their operating pins, substantially as and for the purpose specified. 2nd. The miller car-coupling constructed concave gripping surfaces of the point-headed hooks, substantially as and for the purpose specified.

No. 28,506. Corset. (Corset.)

Abraham Strouse, New York, N.Y., Max Adler, New Haven, Conn., and Saly I. Mayer, New York, N.Y., (assignees of Thomas S. Gilbert, New Haven, Conn.), U.S., 10th February, 1888; 5 years.

Claim.—A corset, the body of which is composed of a single thickness of fabric combined with vertical overlays upon the surface of the said body, said overlays extending from the lower edge of the corset to a point below the upper edge, and the said overlays stitched to the said body by parallel lines of stitches forming vertical pockets, the said pockets terminating at the bottom at the lower edge of the corset, a binding upon the lower edge of the corset to inclose the lower edge of the said body and the lower ends of the said overlays, the said body constructed with openings on the reverse side above the lower edge of the corset into the said pockets, and a flap secured to the upper edge of the said body and extending down over the upper ends of the said overlays with stays in said pockets, all substantially as described.

No. 28,507. Seeder. (Semoir.)

John Carson, Hamilton, D.T., U.S., 10th February, 1888; 5 years.

Claim.—1st. The combination, with the two seeder or drill frames, of the third central carrying-wheel secured on the projecting end of the axle of one carrying-wheel, and having a box connection with one of said frames, substantially as shown and described. 2nd. In a grain drill of the class herein described, the combination, with the frames and their carrying-wheels, of the central supporting wheel secured upon the axle of one of said carrying-wheels the box connection between one end of said axle and the adjoining frame, and the hinge connection between the front cross-bars of said frames, substantially as shown and described. 3rd. The combination of the two frames having the two longitudinal bars, the carrying-wheels having their axles projected between said bars, the third carrying-wheel supported upon the inner end of one of said axles, the box connection upon said axle, and the hinge connection between the front connecting bars of said frames, substantially as shown and described. 4th. The combination, with the seeder or drill frames having their front cross-bars connected together, of the central carrying-wheels, the forwardly projecting parallel bars connected to said frames, the cross-bars, the tongue or pole, and the rods having curved portions, substantially as shown and described, said parallel bars being passed through strappings of the front bars of said frame, as stated.

No. 28,508. Milk Cooler and Aerator.

(Garde-Lait.)

Alexander Thomson, Caintown, Ont., 10th February, 1888; 5 years.

Claim.—1st. The combination, with the can A, of the cover B, flaring rim C having standards C₁, perforated or slitted tube D having shank D₁, strainer E, disk G and dish H, as and for the purpose set forth. 2nd. A milk strainer, cooler and aerator consisting of the slitted or perforated discharge tube D having shank D₁, strainer vessel E at top of said tube, disk G and dish H surrounding said tube, and the tube supported by the cover B, over can A, by a removable rim C having standards C₁, as set forth. 3rd. The straining vessel E having an adjustable straining tube J, telescoping into the discharge tube D, provided with slits D₁ for regulating the flow of milk, as set forth.

No. 28,509. Mechanical Telephone.

(Telephone mécanique.)

John P. Sunderland, Brooklyn, N.Y., U.S., 10th February, 1888; 5 years.

Claim.—1st. The mechanical telephone having a stretched diaphragm, and an insulating button of the described kind in front of said diaphragm, the free wire being connected to said button. 2nd. A diaphragm for mechanical telephones having a central ply covered with leatheroid and waterproofed. 3rd. The line wire connected to an insulated coupling at one side of the casing, and connected to the diaphragm by a coupling under tension, as described. 4th. The wires of several telephones connected to the casings in manner described, and a connecting bar with curved ends for coupling the same.

No. 28,510. Furnace for Burning Wet and Offensive Substances. (Fourneau pour brûler les corps humides et répugnants.)

Andrew Engle, Baxter, Iowa, U.S., 10th February, 1888; 5 years.

Claim.—1st. The combination of the oven 2 provided with an opening in the front, and a valve in the rear thereof, with the fire-place 4 provided with an outlet under the oven, and with the valve 5 closing that outlet, all arranged and operating together, substantially as described. 2nd. The combination of the oven 2 provided with an opening in front, the fire-place 4 in the rear of the oven and connected therewith, and provided with a valve rearward thereof, the fire-place 4 provided with an outlet under the oven, and with the valve 5 closing that outlet, all arranged and operating together, as substantially described. 3rd. The combination of the oven 2 provided with an opening at the front, and a valve in the rear thereof, the fire-place 4 provided with an outlet under the oven, and with the valve 5 closing that outlet, and the fire-place 10 placed in the rear of the valve 5 and above its level, all substantially as described. 4th. The combination of the oven 2 provided with an opening in front, the fire-place 4 in the rear of the oven, and provided with a valve rearward thereof, the fire-place 4 provided with an outlet under the oven, and with the valve 5 closing that outlet, and the fire-place 10 placed in the rear of that valve, all substantially as described. 5th. The combination of the fire-place 10, the boiler 11, the retort 12 in the boiler, the pipe 13 and the superheater 14, all substantially as described. 6th. The combination of the oven 2, the fire-place 4, the fire-place 10 and the boiler 11, all substantially as described. 7th. The combination of the oven 2, the fire-place 4, the fire-place 10, the boiler 11, the retort 12 in the boiler, the pipe 13 and the superheater 14, all substantially as described.

No. 28,511. Corset. (Corset.)

Abraham Strouse, New York, N.Y., Max Adler, New Haven, Conn., and Saly I. Mayer, New York, N.Y., U.S., 11th February, 1888; 5 years.

Claim.—A corset provided with pockets and having the outer thickness cut shorter than the inner thickness at the top, and the inner thickness cut shorter than the outer thickness at the bottom, and whereby the said pockets between the two thicknesses are open upon the outside below the upper edge of the corset, and upon the inside above the lower edge of the corset respectively, and having a band on the outside, at the upper edge of the corset, stitched to the upper edge above the edge of the outer thickness, and overlapping the upper edge of the outer thickness, and also having a band upon the inside of the corset upon the lower edge extending from front to rear attached at the lower edge, below the edge of the inner thickness of the corset, and lapping onto the inner thickness above its lower edge, substantially as described.

No. 28,512. Corset. (Corset.)

Abraham Strouse, New York, N.Y., Max Adler, New Haven, Conn., and Saly I. Mayer, New York, N.Y., U.S., 11th February, 1888; 5 years.

Claim.—A corset composed of two thicknesses, the said two thicknesses of different lengths, so that one thickness extends beyond the other, the two thicknesses stitched to form parallel pockets, leaving the pockets open at the edge of the shorter thickness, with a flap upon the edge of the longer thickness arranged to lap over the edge of the shorter thickness of the corset, and the longer thickness provided with eyelets over the edge of the shorter thickness in line with the several pockets, stays in the said several pockets, the said stays pierced at their ends corresponding to the eyelets in the said longer thickness, and a cord run through the said eyelets in the longer thickness and through the holes in the stays, substantially as and for the purpose described.

No. 28,513. Vessel for Heating Fluids in.

(Ustensile pour faire chauffer les liquides.)

Joseph Lano and Albert T. Lano, Montreal, Que., 11th February, 1888; 5 years.

Claim.—1st. As an improved article of manufacture, a vessel provided in its bottom with intersecting channels, substantially as described. 2nd. As an improved article of manufacture, a vessel provided in its bottom with radiating channels, substantially as described. 3rd. The combination, in a vessel for heating fluids in, of the channels and flat surfaces h, substantially as described.

No. 28,514. Means for Glazing Roofs, etc.

(Moyens de vitrer les toits, etc.)

Joseph D. MacKenzie and John Gillespie, London, Eng., 11th February, 1888; 5 years.

Claim.—A solid metal sash-bar of substantially the form shown, having its central web or feather and the inner surfaces of the grooves or channels covered by a protective sheathing B, in combination with the glazing material C, applied over said sheathing and covering the flanges of the sash-bar and part of its central web, and overlapping the glass, substantially as and for the purposes set forth.

No. 28,515. Washing Machine.

(Machine à blanchir.)

Ephraim D. Hastings, J. H. Wann and D. J. Wann, Patoka, W.T., U.S., 11th February, 1888; 5 years.

Claim.—1st. The combination of the fire-box A, the boiler B arranged over the same, the vertical flue D at the rear end of the fire-box, and having the supplemental boiler B₁ at its upper side, provided with discharge openings, and the trough I on the side of the supplemental boiler, and the perforated drums journaled in the sides of the boiler B and arranged below the trough, substantially as described. 2nd. In a washing-machine, the combination of the boiler B, the rotating drums thereon, the boiler E, arranged above the boiler B and having the discharge trough I, the latter being provided with receptacles, for the purposes set forth, substantially as described.

No. 28,516. Gas Heating Apparatus.

(Appareil de chauffage au gaz.)

Horbert P. Miller, London, Eng., 11th February, 1888; 5 years.

Claim.—An improved portable combination gas heating, cooking and vaporizing apparatus, consisting of atmospheric burner a, with spindle k, threaded collar h, nipple bi, junction piece c, tail piece d, screw spindle e, supply pipe f, tap g, jet g₁, screen plate h, nozzle i, socket rod k₁, with base plate k₂, terra-cotta tube l, cap plate m, dome n, nut o, cage p with crown or rim p₁, tripod base q and vaporizer r with screw pin s, all respectively constructed, combined, arranged and fitted substantially in the manner and for the purposes hereinbefore described and shown.

No. 28,517. Valve. (Soupape.)

Clark B. Dunton, Portland, Me., U.S., 11th February, 1888; 5 years.

Claim.—1st. In a valve of the character described, an auxiliary valve disposed in the gasket-nipple and adapted to automatically close the duct leading to the gauge-tube, when said tube is broken or removed, whereby the tube may be replaced without wasting the water in the boiler, substantially as described. 2nd. The auxiliary valve herein described, the same consisting of the tube x provided with the holes r, head s, flanges e, y, duct t, socket k and pin z, in combination with the valve proper d disposed within said tube, all of said parts being constructed and arranged to operate substantially as set forth. 3rd. The valve A having the gasket-nipple m, the auxil-

fary valve H inserted in said nipple, the gauge-tube B resting in a socket in said valve H, the packing ring k around said tube, and the gasket C on said nipple, constructed, combined and arranged to operate substantially as described.

No. 28,518. Fence. (*Clôture.*)

Martin H. Welds, Reading, Mich., U. S., 11th February, 1888; 5 years.

Claim.—In a fence, the combination of the rails A, the uprights B arranged in pairs and supported on the ground, the ties E connecting the lower ends of each pair of uprights together, the wire anchors D secured to the top of the uprights and crossing each other, and the top rails C partly or wholly supported in the crotches of the anchors, all substantially as described.

No. 28,519. Straw-Cutter. (*Coupe-paille.*)

Joseph Dick, Canton, Ohio, U. S., 11th February, 1888; 5 years.

Claim.—1st. In a straw or feed cutter, knife extending across the supporting frame, in combination with a pair of shafts set obliquely in the cutting plane of the said knife and carrying cranks joined to said knife, substantially as described. 2nd. The combination of the frame carrying oblique disks C, C', connecting bars united at their ends to opposite faces of said disks, a knife or cutter secured to one of said bars, and oblique shafts upon which said disks are mounted, substantially as specified. 3rd. The combination, with a series of knives extending across the supporting-frame, of a pair of shafts set obliquely to the cutting plane of the knives, and a pair of disks connected to the ends of the knife bars and set obliquely thereto, substantially as described. 4th. The combination, with the frame B, carrying trough A and bearings d, of oblique shafts c, c', carrying disks C, C', the knife-bars D connected pivotally at their ends to opposite faces of the disks, and the knives secured to said knife-bars, substantially as described. 5th. The combination, with the frame B and the disks C, C', set obliquely thereon, of the knife-bars D, the knives secured thereto, and the pins E connecting the bars pivotally to the disks, substantially as set forth. 6th. The combination, with the frame of a straw-cutter and the feed-trough thereof, of a pair of shafts set obliquely to the discharge end of the trough and carrying oblique disks, connecting bars joined at their ends to opposite sides of said disks, and a knife secured to one end of said bars, substantially as described.

No. 28,520. Running Gear for Vehicles.

(*Train de voiture.*)

Edward N. Honey, Montreal, Que., (assignee of Stephen Burdissall, Fremont, Ohio, U. S.), 11th February, 1888; 5 years.

Claim.—1st. In a vehicle and in combination, the fore-axle, the lower plate F, of the fifth-wheel, having the bearing arms d, d', and central sleeve, with king-bolt anchored therein, the yokes and attaching plate J, securing said parts together, the head block, the upper plate of the fifth-wheel having the perch-arms and adapted to be attached to the upper plate of the fifth-wheel by means of the yokes Y, Y', as and for the purposes specified. 2nd. In a vehicle, the combination of the fore-axle, the lower plate F, of the fifth-wheel, having the bearing arms d, d', and the hub and sleeves formed integrally therewith, the king-bolt, the yokes securing said plate to the axle, the attaching plate J having the depending stud a, the head-block, the upper section of the fifth-wheel E having the central arm with chamber K and hole S, the detachable perch-head H adapted to receive the body of the plate E of the fifth-wheel, and having one or more diverging perch-rods or braces, the yokes Y, Y', and the brace-iron U, having the rear end attached to the perch being pivotally attached to the stud below the axle, its free vertical end being adjustably attached to the central arm of the upper plate of the fifth-wheel forward of the axle, substantially as specified. 3rd. In a vehicle, the combination of the head-block, the upper plate E, of the fifth-wheel, having the flanges e, e', and bearing arms d, d', the bolts attaching said plate to the head-block, the detachable perch-head having one or more rearwardly-diverging perch rods or braces, said perch-head adapted to receive the upper plate of the fifth-wheel, the spring, the yokes Y, Y', their threaded ends passing through the perch-head, and nuts securing said parts together. 4th. In combination with the fore-axle and its fifth-wheel plate F, having the central hub and sleeve, the king-bolt mounted therein, the yokes Y, the attaching plate having the heads c, c', to receive said yokes, and the central stud with annular flange f, the perch, the brace-iron U, having one end attached to the perch and having pivotal connection to the stud and flange, its stem W having the adjusting nuts, the head-block and the upper plate of the fifth-wheel attached thereto, and having the central horizontal arm, with chamber and hole to receive the sleeve of the plate F, and stem of brace-iron, substantially as specified. 5th. In combination with the fore-axle and the head block, the two-plate fifth-wheel F, E, the king bolt anchored to the lower plate of the fifth-wheel and passing through the head block, the perch and the perch-head having one or more diverging arms, said perch-head adapted to be attached to, or detached from, the upper plate E of the fifth-wheel, as and for the purpose specified.

No. 28,521. Fruit Gatherer. (*Cueilleur.*)

Charles E. Cook and William S. Green, South Byron, N. Y., U. S., 11th February, 1888; 5 years.

Claim.—1st. In a fruit gatherer, to be placed beside the trunk of a tree, the combination of an upright frame, consisting of two or more padded posts, with a receiver C, C, C, supported above hinged arms A, A, A, a hood F, F, F, stretched within and above said receiver, and a padded cap E on the upright frame, substantially as described. 2nd. The combination, in a fruit gatherer, of an upright frame consisting of two or more padded posts, with a receiver C, C, C, supported above hinged arms A, A, A, a hood F, F, F, stretched with-

in and above said receiver, a padded cap E on the upright frame, a spout e attached to the lowest part of the receiver and surrounding the upright frame, and a padded bag / suspended inside this spout, substantially as described. 3rd. The combination, in a fruit gatherer, of an upright frame consisting of two or more padded posts, with a receiver C, C, C, supported above hinged arms A, A, A, a hood F, F, F stretched within and above said receiver, a padded cap E on the upright frame, a spout e attached to the lowest part of the receiver and surrounding the upright frame, a padded bag / suspended inside this spout, and guy lines g, h, for stretching the receiver, substantially as described. 4th. The combination, in a fruit gatherer, of an upright frame, consisting of two or more padded posts, with a receiver C, C, C, supported above hinged arms A, A, A, elastic straps b, b, b for holding the sections of said receiver together, elastic straps c, c, c for attaching said receiver to the hinged arms, a hood F, F, F, stretched within and above said receiver, a padded cap E on the upright frame, a spout e attached to the lowest part of the receiver and surrounding the upright frame, a padded bag / suspended inside this spout, and guy lines g, h, for stretching the receiver, substantially as described.

No. 28,522. Cash Carrier Apparatus.

(*Transporte-monnaie.*)

Samuel W. Barr, Mansfield, Ohio, U. S., 11th February, 1888; 5 years.

Claim.—1st. The combination, with track-wires, of a carrier with wheels adapted to travel on such track-wires, and mechanism, substantially as indicated, for pressing the wires obliquely against the rear of the wheels for propelling the carrier, substantially as set forth. 2nd. The combination, with a carrier, the same having suitable carrier-wheels, of track wires leading between the wheels of the carrier, and mechanism, substantially as described, for distending the wires at the sending station and rearward of the carrier-wheels, substantially as set forth. 3rd. The combination, with a carrier having suitable wheels, of track-wires leading between the wheels and extending from station to station, and suitable mechanism, substantially as shown, for spreading the wires rearward of the wheels, and converging or bringing parallel the wires forward of the wheels, substantially as set forth. 4th. The combination of a carrier and two track wires, extending from end to end of its journey, and devices at each end to impart a wedging action to said wires throughout their length, whereby the carrier is impelled to and fro with a constant impulse. 5th. The combination, with a carrier and wheels and track-wires leading between the wheels and extending from station to station, of pivoted levers located at the stations, the wires being attached to the levers on opposite sides of the fulcrums, the length of the respective wires being such that the levers are made to stand, substantially at right angles to each other, substantially as set forth. 6th. The combination, with track-wires, a carrier adapted to travel on such track-wires, and mechanism, substantially as indicated, for pressing the wires obliquely against the rear of the carrier wheels for propelling the carrier, of bumpers located at the station, and a catch for engaging the carrier, substantially as set forth.

No. 28,523. Middlings Purifier.

(*Epurateur des gruaux.*)

Heman W. Stone, Jr., Morris, Minn., U. S., 11th February, 1888; 5 years.

Claim.—1st. In combination with the casing A, the riddle, consisting of a series of screens of varying mesh, all of said screens being on the same plane, the downwardly-inclined separate plates p, h, i, j, extending longitudinally of the casing below the riddle, said plates being arranged one above the other, with a space separating their adjoining edges, whereby the meal can pass from the riddle on to the plates and then pass from one plate to the other, the meal in its passage from one plate to the other being subjected to the action of the air through the spaces separating the adjoining edges of the plates, and the suction fan G located at the top of the casing above the riddle and providing an ascending current of air through the riddle, the conveyor boxes below the plates and receiving the meal therefrom, and the hinged deflector plates D, E, F, registering vertically with one of the divisions of the riddle above, as set forth. 2nd. The combination of the casing A, the suction fan G at the top thereof, the riddle C arranged longitudinally within the casing below the suction fan, so that the latter will cause an ascending current of air to pass through the riddle, the opening M₂ in one side of the casing below the riddle, adjusting slats k, the chute arranged below the riddle, and the series of transversely inclined longitudinal plates located opposite the opening M₂, and one above the other in an inclined series, and having their adjoining edges separated by an intervening space, whereby the air entering therethrough is caused to circulate through the spaces between the said inclined plates, and thus the meal falling from the ridge on to the plates, and passing from plate to plate, is subjected to the action of a vertical ascending current of air by means of the fan G, and also a transverse current through the opening M₂, as set forth. 3rd. In combination with the casing of the machine, having an opening in the side A, thereof, the suction fan, the vibrating riddle, consisting of a series of screen of varying sized mesh, the downwardly-inclined plates p, h, i, j, extending longitudinally of the casing, the slats k, l, covering the openings in the side A, the boards B and B' forming the chute, the downwardly-inclined deflector plates D, E, F, the conveyor partition d, b, substantially as described. 4th. In combination with the casing A, the suction fan G at the top thereof, the riddle C below the fan, so that the fan will cause an ascending current of air to pass through the riddle, the opening M₂ in the side of the casing, the conveyor boxes and the inclined plates between the riddle and the conveyor boxes, the air admitted through the opening M₂, combined with the ascending current of air induced by the suction fan G, serving to separate the intermediate grade from the middlings, as the material drops in a thin stream from the inclined plates into the conveyor boxes, as set forth.

No. 28,524. Process of Burning Wet and Offensive Substances. (*Procédé pour brûler les corps humides et puants.*)

Andrew Englo, Baxter, Iowa, U.S. 11th February, 1883; 5 years.

Claim.—The process of burning wet and offensive substances, which consists, first, in volatilizing their liquid constituents by means of heat generated outside of the receptacle of these substances and conducted into that receptacle through the walls thereof, and, second, in conducting its resulting vapors out of that receptacle and into and through fire exterior thereto, and, third, in turning the dry residuum of those substances in their place of sedimentary deposit in that receptacle, all substantially as described.

No. 28,525. Potter's Mould. (*Moule de poterie.*)

Joseph S. Mayer and William H. Ivons, Trenton, N. J., U. S., 11th February, 1888; 5 years.

Claim.—A potter's mould case, consisting of the case B, having internally the configuration of the vessel to be made externally tapered with open bottom, and vertically divided into halves, in combination with correspondingly tapered inclosing case A, adapted to clamp said halves together, and having an integral central raised portion A', to fit into the open bottom of the inner case B, substantially as and for the purpose set forth.

No. 28,526. Potter's Mould. (*Moule de poterie.*)

Joseph S. Mayer and William H. Ivons, Trenton, N. J., U. S., 11th February, 1888; 5 years.

Claim.—The process of forming the handles of potter's vessels, which consists of hand pressing the plastic clay between the two halves of mould M, M', and then uniting them to the vessel in the same mould during the continuous process of jiggoring the same, substantially as specified.

No. 28,527. Heat Radiator. (*Calorifère.*)

John R. Tracey, Winnipeg, Man., 13th February, 1883; 5 years.

Claim.—1st. The combination of outside casing B, cone A, with opening at I, inner pipe M, having hole at C, outer pipe N, having hole at D, handle E in horizontal slot, cross-bar H and vertical rod G, having arrow-shaped bottom, substantially as and for the purposes hereinbefore set forth. 2nd. The combination of radiators and self-cleaning rod G, substantially as and for the purpose herein set forth.

No. 28,528. Lantern. (*Lanterne.*)

Charles E. Orr, Hamilton, Ont., 17th February, 1883; 5 years.

Claim.—1st. The combination, in a lantern, of the spring ring hook e and ring e' attached to the top of tube c, and the handle d with its collar d', substantially as and for the purpose hereinbefore set forth. 2nd. In a lantern, the combination of the rings e and e', the slide-bars J attached to the cover K, and the guides n, substantially as and for the purpose hereinbefore set forth. 3rd. The combination, with the rings e and e', of the bars J, guides n, guide-bars I, springs H, guides a' secured to the base of globe a, substantially as and for the purpose hereinbefore set forth. 4th. The combination, in a lantern, of the guard O, provided with hinges O', and spring loop P, substantially as and for the purpose hereinbefore set forth.

No. 28,529. Adjustable Tone Regulator for Pianos. (*Régulateur mobile des tons de pianos.*)

Fred M. Williams, Detroit, Mich., U.S., 17th February, 1888; 5 years.

Claim.—1st. In a piano, the device for operating the hammer-rest rail consisting of the pivoted hanger A, pad B, pivotal notched handle D and scutcheon F, substantially as shown and described and for the purpose specified. 2nd. In a piano, the combination of the pivotal hanger A, formed with slot a', pad B, screw C, C', pivotal notched handle D, front board E formed with a slot d', and scutcheon F, in combination with the hammer rest rail, substantially as shown and described and for the purpose specified. 3rd. In a piano, the combination of the pivotal hanger A, formed with perforations a', pad B, pivotal notched handle D, pivot pin a', front board E formed with a slot d', and scutcheon F, in combination with a hammer rest rail, substantially as shown and described and for the purpose specified. 4th. In a piano, the pivotal hanger A, formed with an elongated slot a' and perforations a', pad B, screws C, C', pivotal notched handle D, pivot pin a', front board E formed with a slot d', and scutcheon F, in combination with the hammer rest rail of a piano, substantially as shown and described and for the purpose specified.

No. 28,530. Manufacture of Cigarettes.

(*Fabrication des cigarettes.*)

Heinrich F. Riedel, Dresden, Germany, 17th February, 1883; 5 years.

Claim.—1st. The hereinbefore described improvement in the manufacture of cigarettes having wrappers of tobacco leaf, which consists in forming said wrappers by folding or winding tobacco leaf around an expansible core or mandrel. 2nd. The improvements in the process of manufacturing cigarettes with wrappers of tobacco leaf, which consists in folding or winding tobacco leaf around an expansible core or mandrel, then securing the edges or an end of said tobacco leaf by adhesive material, then folding or winding a supporting wrapper of suitable material, such as paper, around said wrapper of tobacco leaf, drying the two wrappers, then removing said core or mandrel, filling the inner wrapper of tobacco leaf with tobacco, and finally removing the supporting wrapper, substantially as herein described. 3rd. The hereinabove described process of manufacturing cigarettes with wrappers of tobacco leaf with

smooth external surfaces, which consists in folding or winding tobacco leaf around an expansible core or mandrel provided with an external elastic cover or surface, then scouring the edges or an end of said tobacco leaf by adhesive material, then tightly folding or winding a supporting wrapper of paper, or other suitable material, around said tobacco leaf wrapper, drying the two wrappers, then removing said core or mandrel, filling the tobacco leaf wrapper with tobacco, and finally removing the second or supporting wrapper, as set forth. 4th. A compound core or mandrel for manufacturing cigarette wrappers of tobacco leaf, said core or mandrel comprising a split tube or two semi-annular blocks, and a rod or spindle adapted to enter said split tube or pass between said blocks, substantially as herein described for the purpose specified. 5th. A compound core or mandrel for manufacturing cigarette wrappers of tobacco leaf, said core or mandrel comprising a split tube or two semi-annular blocks, a rod or spindle adapted to enter said split tube or pass between said blocks, and a tube or cover of elastic or yielding material surrounding said split tube or said blocks, substantially as herein described for the purposes set forth. 6th. As a new article of manufacture, a cigarette having a wrapper of tobacco leaf formed by folding or winding tobacco leaf around an expansible core or mandrel, substantially as herein described.

No. 28,531. Harrow. (*Herse.*)

Francis M. Everingham, Syracuse, N. Y., U.S., 17th February, 1888; 5 years.

Claim.—1st. A harrow having the points of its teeth inclining forward, and the tooth-bearing beams inclining from the front edge rearward to slide over the ground and, also, the cut of the teeth, substantially as set forth. 2nd. In combination with the tooth-bearing beams, longitudinal connecting bars formed with downwardly projecting arms, connected at their lower ends to the aforesaid beams and carrying the main portions of the longitudinal bars at an elevation above the said beams, substantially as described and shown. 3rd. A harrow composed of beams disposed at an angle to the line of draft, spring metal teeth attached directly to said beams, and longitudinal bars connected to the tooth-bearing beams, substantially as described and shown. 4th. In a harrow-frame, the combination of longitudinal bars formed with downward projecting arms, and tooth-bearing cross-bars adjustably connected to said arms and adapted to be set into different angles of inclination from their front edges rearward, as set forth and shown. 5th. In a harrow-frame, the combination of tooth-bearing cross-bars, posts rising from said cross-bars, and longitudinal bars formed with downward projecting arms pivoted to one end of the respective posts and secured adjustably to the other end of the said posts, substantially as described and shown. 6th. In a harrow-frame, the combination of teeth bearing cross-bars, longitudinal bars hinged on said cross-bars, and longitudinal bars connected adjustably to the cross-bars to allow the latter to be set into different angles of inclination, substantially as set forth and shown. 7th. A harrow-frame composed of front teeth-bearing cross-bars, disposed divergent from the centre of the line of draft, rear teeth-bearing cross-bars disposed convergent to the said line of draft, and longitudinal bars connected to said cross-bars and elevated above the same between their points of attachment, substantially as set forth and shown. 8th. In a harrow-frame, the combination of front and rear teeth-bearing cross-bars, disposed respectively divergent and convergent from the centre of line of draft and hinged together on said line, and longitudinal bars connected adjustably to said cross-bars to allow the latter to be set into different angles of inclination from their front edges rearward, and the intermediate portions of the longitudinal bars elevated above the plane of the aforesaid cross-bars, all constructed and combined substantially as described and shown. 9th. In combination with the cross bars disposed inclining from their front edges rearward and at an angle to the line of draft, the spring-teeth shanks placed across said bars parallel with the line of draft, levelling shims introduced between one of the edges of the teeth-shanks and cross-bars, and fastening devices for securing the teeth and shims to the cross-bars, as set forth and shown. 10th. In combination with the cross-bars disposed inclining from their front edges rearward at an angle to the line of draft, the spring teeth shanks placed across said bars parallel with the line of draft, levelling shims introduced between one of the edges of the teeth-shanks and cross-bars, and having integral with them eyes projecting at the sides of the teeth shanks, clips placed across the latter, and bolts passing through the clips and through the aforesaid eyes and cross-bars, substantially as described and shown. 11th. The combination, with the cross-bars, of a hinge attached to the adjacent ends of said bars and connecting the same together, a spring tooth mounted on one of the leaves of said hinge, and a rib on said leaf abutting against the side of the tooth, substantially as described and shown.

No. 28,532. Railway Rail Clearer.

(*Grattoir de chemin de fer.*)

Frederick C. Harris and Amos R. Bliss, Sackville, N. B., 17th February, 1888; 5 years.

Claim.—1st. The combination of the bent hingo pins F, F', F and the scrapers E, E, substantially for the purpose hereinbefore set forth. 2nd. The combination, with the hingo pins F, etc., scrapers E, E, of the adjusting screw O O, slotted seat and guides N, N, substantially as and for the purpose hereinbefore set forth. 3rd. In rail clearers, the application of steam, compressed air or hydraulic pressure, as a resistant medium, to oppose the backward force of the snow or frozen sleet, when being pushed off the rails.

No. 28,533. Dental File. (*Rugine de dentiste.*)

John A. McClelland, Louisville, Ky., U. S., 17th February, 1888; 5 years.

Claim.—1st. In combination with a wooden support or covering, as set forth, a cleansing composition for the tooth composed of balsam fir and an abrading material, the same being incorporated with each other and applied to the support in a heated condition, so that the parts will adhere to each other, substantially as shown and described.

2nd. A hard or rigid composition for cleansing and polishing teeth composed of soluble gum-balsam and abrading substance and borax, the several ingredients being combined substantially in the proportions and manner described.

No. 28,534. Sleigh Runner. (*Patin de traîneau.*)

Stephen C. Brownell, Windsor, Ont., 17th February, 1888; 5 years.

Claim.—1st. An improvement in sleigh runners consisting in the combination, with a short bar or supplementary axle provided with a downward extension and outward journal projection, of an arched knee provided with a hub on its upper side, and a sleigh runner secured to the lower end of said arched knee, substantially as specified. 2nd. An improvement in sleigh runners consisting of a short bar or supplementary axle provided with a downward projection and outward journal extension, an arched knee provided with a hub on its upper side, and a sleigh runner secured to the lower ends of said arched knee, in combination with a vehicle-axle, rubber-lined clips, and means, substantially as described, for securing the vehicle axle to the supplementary axle. 3rd. An improvement in sleigh runners consisting in the combination, with a short bar or supplementary axle provided on its outer end with a journal, of a sleigh runner having a hub suitably mounted thereon, a vehicle axle secured to the supplementary axle, and braces interposed between the runners and axles, said braces being rigidly secured to the runners and movably secured to said axles, whereby the runner and connected parts may rock, substantially as described and for the purposes set forth. 4th. The combination, with the sleigh-runner, the arched knee secured thereto, and the hub secured to the top of said arched knee, of the supplementary or runner axle detachably secured to the axle of a wheeled vehicle, said runner axle being provided on its outer end with a journal having a bearing in the hub aforesaid, substantially as specified. 5th. The combination, with the runner A and the arched knee C secured thereto, the hub secured to the top of said arched knee, and the yoke E connecting the hub with the front end of the runner, of the supplementary or runner axle secured to the vehicle axle S, said runner axle being provided on its outer end with a journal having a bearing in the hub, substantially as specified. 6th. The combination, with the sleigh runner, the arched knee secured to and bracing the same, and the hub secured to the top of said arched knee, of the runner axle having its inner portion secured to the underside of a vehicle axle, and its journal end I rounded and threaded and passing centrally through the hub, and the retaining nut i on the threaded end of the journal I, substantially as specified. 7th. The combination, with the sleigh runner, the arched knee secured thereto, and the hub secured to the arched knee, of the supplementary or runner axle having the lugs H, journal I passing through the hub, the clips J provided with rounded threaded ends, the clamp bars K, and retaining nuts L, substantially as specified. 8th. The combination, with the runners, the arched knees secured thereto and provided with a hub, of the vehicle axle G, runner axle G', provided with journal I and lugs H, the clips J, the clamp-bars K, nuts L, brace-bar L' having its outer ends secured to the inner surfaces of the arched knees, and its inner portion bent to form a loop, the lugs I, i, depending from the inner bar K, said lugs being provided with curved openings K₂ and the bolt K₁, all constructed and arranged substantially as described and for the purposes set forth.

No. 28,535. Electric Belt and Truss.

(*Ceinture et bandage électriques.*)

Andrew T. Sherwood, San Francisco, Cal., U.S., 18th February, 1888; 5 years.

Claim.—1st. An elastic flexible truss-pad having a rigid base, a swivel-pin connecting it with a supporting-belt, about which pin the pad may be turned and adjusted, as shown, in combination with a hook or connection loosely swivelled to the pin and to which the strap may be attached, substantially as herein described. 2nd. An elastic flexible pad with a rigid back and swivel-pin connecting with the supporting-belt, so that it may be adjusted upon the pin, and a swivel-hook loosely attached to said pin, in combination with a metallic plate fixed in the interior portion of the pad, a flexible elastic conductor between said plate and the swivel-hook, and a voltaic belt or battery having one of its poles applied to the person and the other so formed as to be connected to, or detached from, the swivel hook, so that the voltaic current may be used or cut off, substantially as herein described. 3rd. A plate having an extension by which it is connected with a voltaic belt, and a curved hook or loop forming a recess between the plate and voltaic belt, to allow its being passed over the truss-belt without removing or disturbing the latter, substantially as herein shown and described.

No. 28,536. Plan of Anchoring Windmill Derricks. (*Système d'ancrage des chaises des moulins à vent.*)

George A. Dunn, Arkona, Ont., 18th February, 1888; 5 years.

Claim.—The combination, with a windmill column supported directly over a well, with one or more plank or other suitable material bolted to posts placed on each side of the well, for the purposes set forth.

No. 28,537. Saw-Swage. (*Etampe à scie.*)

Hamilton W. Williams, Nashville, Tenn., U.S., 13th February, 1888; 5 years.

Claim.—1st. In a saw-swage, the combination of the anvil, the operating lever and the roller D, journalled in the said lever and adapted to turn while in contact with the edge of the saw tooth, substantially as described. 2nd. The combination, in a saw-swage, of the anvil, the operating lever having the roller D, for the purpose set forth, and the clamp lever adapted to engage one of the teeth of the saw and hold the same in position when the operating lever is operated, substantially as described. 3rd. The combination, in a saw-swage,

of the lever X, the roller D, journalled at the free end thereof, the toggle-jointed levers connecting the lever X to a fixed point, and the lever D, attached to the said toggle-jointed levers, substantially as described. 4th. The combination, in a saw-swage, of the bed-plate, the operating lever pivoted thereon and having the roller D, for the purpose set forth, and the adjustable stops to limit the motion of the operating lever, substantially as described. 5th. The combination, in a saw-swage, of the bed-plate and the anvil recessed thereon and bolted thereto, substantially as described. 6th. The combination, in a saw-swage, of the bed-plate, the anvil recessed thereon and bolted thereto, and the key or wedge bearing against the outer end of the anvil to retain the latter against displacement, substantially as described. 7th. The combination, in a saw-swage, of the bed-plate, the bridge secured thereto, the operating lever fulcrumed to the bridge, and having the roller D, the lever L, also fulcrumed to the bridge and having the arm M, for the purpose set forth, and the anvil, substantially as described. 8th. The combination of the bed-plate, having the bed flange provided with the recess V, the lever L, having the arm M, adapted to operate in the said recess, for the purpose set forth, the anvil and the swaging lever, substantially as described. 9th. The combination, in a saw swage, of the bed-plate, the lever L, having the arm M, to engage one of the teeth of the saw and hold the same in position while being swaged, and the spring to normally disengage the said lever from the saw, when the lever is released, substantially as described. 10th. The combination, in a saw-swage, of the bed-plate having the slot F, the adjusting screw D, the gauge-head connected to the end of the said screw and movable thereby, and the pivotal bolt extending through the gauge-head and working in slot F, substantially as described. 11th. The combination, in a saw swage, of the adjusting screw G, the yoke swivelled to the said screw and the pivoted gauge-head pivotally bearing on the yoke, substantially as described. 12th. The combination, in a saw swage, of the adjusting screw, the curved yoke swivelled thereto, and the gauge-head having the convex offset bearing against the concave side of the yoke, substantially as described.

No. 28,538. Blotter Case for Copying Presses. (*Boîte de buvard pour presses à copier.*)

John W. Callant, Toledo, and Charles T. Pope, Bowling Green, Ohio, U.S., 18th February, 1888; 5 years.

Claim.—1st. In a blotter case for copying presses, an outer pan, a pan of less area, seated within the same, whereby a space for liquid is formed, and a cover having depending edges which rest within the liquid receptacle, as and for the purpose set forth. 2nd. In a blotter case for copying presses, two pans, one within the other, in combination with a water seal between the two, and a cover having a spring valve and operating lever, as and for the purpose set forth. 3rd. In a blotter case for copying presses, provided with yielding supports at the bottom, and a compartment beneath the bottom pan formed of a shelf connected with the log supports, as and for the purpose set forth. 4th. A cover for a blotter case, having a pivoted lever located thereon, the inner end thereof adapted to depress a valve connected with the cover, as and for the purpose set forth.

No. 28,539. Button-Hole Attachment.

(*Appareil à boutonnière.*)

The Harris Button-Hole Attachment Co. (assignee of Henry J. Williams), New York, N.Y., U.S., 18th February, 1888; 5 years.

Claim.—1st. The combination of the bed-plate, the feed-plate carrying a cloth clamp and having the slot h and the former slot, the cranked actuating lever, the endwise reciprocating lever pivotally connected at one end with said actuating lever, mechanism actuated by connection with the opposite end of the reciprocating lever, for imparting longitudinal movement to the feed-plate, the pawl pivoted to the reciprocating lever between its ends, and mechanism actuated thereby, for imparting lateral movement to the feed-plate, substantially as and for the purpose set forth. 2nd. The combination of the bed-plate, the feed-plate having a cloth-clamp and longitudinally slotted at h, and provided with a former slot, the endwise reciprocating lever, means for actuating it, the pawl i carried by the lever, the ratchet actuated thereby, the cam turning with the ratchet, the adjustably fulcrumed lever, having a slot in which the cam works, the link connected at one end with the adjustably-fulcrumed lever, and with the opposite end of which the feed-plate has connection by way of its slot, and the guide-way for the link, substantially as and for the purpose set forth. 3rd. The combination of the bed-plate, the feed-plate having the slot h and provided with the former slot, the endwise reciprocating lever, means for actuating it, the pawl m operated by the reciprocating lever, the ratchet actuated by this pawl, the bossed pinion of the ratchet, the sliding plate in a groove of the bed-plate and carrying the ratchet, the pins carried by the feed-plate and actuated by the ratchet pinion, and the automatically actuated eccentric crank and link mechanism, substantially as and for the purpose set forth. 4th. The combination of the bed-plate, the feed-plate having the former slot and provided with the side guide-way, the ratchet J having the boss and pinion, mechanism for intermittently actuating the ratchet, the sliding plate carrying the ratchet, the eccentric engaging with the sliding plate, the eccentric crank, the adjustable link-connection between said crank and the side guide-way of the feed-plate, and the pins carried by the feed-plate and actuated by the ratchet pinion, substantially as and for the purpose set forth. 5th. The combination of the bed-plate, the feed-plate having the former slot, the ratchet J having the boss and pinion mechanism for actuating the ratchet, the series of vertically movable pin blocks, each having the holes and narrow connecting way through them from side to side, the fixed posts at opposite ends of the series of movable pin blocks, and the check-rod cut away on opposite sides passing through the holes in the pin blocks and adjustably supported by said fixed posts, substantially as and for the purpose set forth. 6th. The combination of the bed-plate, the feed-plate having the former slot and provided with the side guide-way, the eccentric, the sliding plate in a groove in the bed-plate and engaging the eccentric, the pins carried by the feed-plate, the bossed pinion and its actuating ratchet carried by the sliding plate, the eccentric crank and the

link connecting it with the side guide-way of the feed-plate, substantially as and for the purpose set forth. 7th. The combination of the bed-plate, the feed-plate, the ratchet J, the sliding plate carrying the ratchet, the pawl actuating the ratchet, mechanism for actuating the pawl, and the adjustable feed-regulator and check spring carried by the sliding plate, substantially as and for the purpose set forth.

No. 28,540. Apparatus for Cutting and Beveling or Scarfing the Edges of Flexible or Elastic Materials.
(Appareil pour tailler et amincir la tranche des corps élastiques.)

The Paragon Shoe Cutter Co. (assignee of Jonas Parker and Mark L. Gunning), Williamsport, Penn., U.S., 18th February, 1888; 5 years.

Claim.—1st. In an apparatus for cutting and beveling articles of flexible or elastic material, the combination of the male and female cutters, and an annular beveling plate arranged between said cutters, substantially as and for the purposes described. 2nd. In an apparatus for cutting and beveling articles of flexible or elastic material, the combination of the male and female cutters, and an annular beveling plate arranged above and adjustable with relation to the female cutter, substantially as and for the purposes described. 3rd. In a machine for cutting blanks, the combination of the male and female cutters, the feed apron and mechanism for supporting and reciprocating the male cutter and apron, substantially as described. 4th. In a machine for cutting blanks, the combination of the male cutter provided with spurs, the female cutter, and the beveling plate supported above the female cutter and provided with perforations to receive said spurs, substantially as described. 5th. In a machine for cutting blanks, the combination of the male and female cutters, the beveling plate provided with perforations, the spurs secured to the male cutter, and the stripper springs, substantially as described. 6th. The combination, substantially as described, of the male cutter carrying spurs, the female cutter, the beveling plate arranged above the female cutter, and the apron arranged to reciprocate above the beveling plate, substantially as and for the purposes specified. 7th. The combination, substantially as described, of the male cutter carrying spurs, the female cutter, the beveling or crimping plate arranged above the female cutter, an apron arranged to reciprocate above the beveling plate, and a carrying belt arranged below the female cutter, substantially as and for the purposes specified. 8th. In a machine for cutting and beveling articles of flexible or elastic material, the combination of male and female die or cutters having sloping or inclined cutting edges for producing a continuously progressive or scissors cut, substantially as and for the purposes specified. 9th. In a machine for cutting and beveling articles of flexible or elastic material, the combination of a male and a female die or cutters, having sloping or inclined cutting edges to obtain a scissors cut, and an annular crimping or beveling plate arranged between the same, substantially as and for the purposes specified.

No. 28,541. Machine for Baling Saw Dust, etc.
(Machine pour emballer la sciure, &c.)

The Maine Compress Co. (assignee of Charles E. Mitchell Bangor, Me., U.S., 18th February, 1888; 5 years.

Claim.—1st. An inside case having expansible sides, stiffening bars at the top of each side, and means whereby said case may be withdrawn, substantially as described. 2nd. A metallic inside case having expansible and tapering or wedge-shaped sides, connected at their tops and rounded at their lower corners, the stiffening bars and means whereby the case may be withdrawn, substantially as shown and specified. 3rd. A metallic inside case, having expansible tapering or wedge-shaped sides, two of which are provided with flanges, as set forth, the stiffening-bars, and means whereby the case may be withdrawn, in combination with a bag and a crib having a recess and transverse grooves, for the purpose shown and substantially as described. 4th. The combination of an inside case having expansible sides, stiffening bars at the top of each side, and means whereby said case may be withdrawn, with a bag into which the case is inserted, and a crib outside of said case, and bag holding the same during pressure, substantially as described and for the purpose set forth.

No. 28,542. Freight Elevating and Transporting Apparatus.
(Appareil pour monter et transporter les marchandises.)

William H. Russell, Vancouver, B.C., 18th February, 1888; 5 years.

Claim.—1st. In an apparatus for elevating and transporting freight, the combination of a series of carriers and an elevator hinged together endwise to assume different elevations and angles, said carriers and elevator consisting of channels, the bottom of which consist of travelling aprons, running over a driving roller at each end, and intermediate friction rollers, said driving rollers connected for transmitting motion from one to another, and said elevator apron provided with brackets or tables to receive the packages, substantially as set forth. 2nd. In an apparatus for transporting freight, the combination of the sides S and framing S¹ forming a channel, driving rollers R journaled at the ends, and some of them provided with pulleys P, friction rollers r journaled at intervals between the driving rollers, suspended roller r¹ at the joint, endless apron A running over the driving rollers and supported upon the friction rollers, the hinges h at the ends of said sides, the suspended rollers r¹, chains P¹, or equivalents, upon the said pulleys P, for receiving and transmitting motion, substantially as set forth. 3rd. In an apparatus for elevating freight, the combination of the sides S and frames S¹ forming a channel, driving rollers R journaled at the ends, and some of them having pulleys P, friction rollers r journaled at intervals between the driving rollers, endless apron A running over the driving rollers and supported upon the friction rollers, and table B, b secured to said apron, substantially as set forth. 4th. In an apparatus for elevating and transporting freight, the combination of

hinged carriers C, consisting of sides S, S¹, rollers R, r and r¹, apron A and pulleys P, hinged carriers C¹, consisting of sides S, rollers R and r, apron A, pulleys P and grooved roller R¹, elevator E, consisting of sides S, S¹, rollers R and r, apron A, tables B, b, and a pulley or pulleys upon one of said rollers R, and the connecting chains or equivalents P¹, substantially as set forth.

No. 28,543. Presser Wheel for Knitting Machines.
(Roue de comprimeur pour machines à tricoter.)

Peter S. Kinsley, Newark, N.J., U.S., 13th February, 1888; 15 years.

Claim.—1st. The combination, with the presser wheel provided with radially arranged slots, which in its peripheral face are in line with the axis and are therefrom extended inwardly in its upper face, of blades adapted to be applied to said slots to close the same, and means for clamping said blades in said slots, whereby the said blades may be attached to, or detached from, said wheel, substantially as described. 2nd. The combination of the wheel A provided with slots S, the blades B, the cap C, the nut n and the hub H, said parts being constructed and arranged to operate substantially in the manner as and for the purposes set forth. 3rd. The combination of the body A formed with a threaded hub H, hollowed out part a¹ and thicker peripheral rim a², provided with radial slots S, the bottom of which are on a line with the floor of the hollowed out portion a¹, with the adjustable blades B fitted in said radial slots, the cap C set over the blades, and a retaining-nut n, substantially as described and for the purposes stated.

No. 28,544. Pedal Attachment for Organ Cases.
(Disposition aux pédales d'orgues.)

William Doherty, Clinton, Ont., 18th February, 1888; 5 years.

Claim.—1st. The combination of the nosing N secured to pedal, and the rabbetted piece B secured to the pedal board O, forming a close joint, to prevent the ingress of mice, vermin and dust at the foot of the pedal. 2nd. The combination of the raised panel C with the pedal A, and the centre bracket E, and the pedal brackets D, forming thereby a close joint for the prevention of the ingress of mice, vermin and dust, at all sides of the pedals. 3rd. The combination of the strip F with the toe-piece M and the strip L, forming a close joint at the top of the pedal, for the prevention of the ingress of mice, vermin or dust, and which will remain a close joint even though the pedal with the toe-piece M were not pressed (within 1 inch) against the strip L, glued or otherwise secured to the organ case. 4th. The combination of the pedal board O, the rabbetted piece B, the nosing N, the raised panel C, the strip F, the toe-piece M, the strip L with the pedal A, the organ case K, and the pedal brackets D, and the centre bracket E.

No. 28,545. Electric Arc Lamp for Locomotive Head Lights.
(Lampe électrique à arc pour locomotives.)

The Falls Rivet Company, (assignee of George C. Pyle), Cuyahoga Falls, Ohio, U.S., 18th February, 1888; 5 years.

Claim.—1st. The sliding board of a locomotive head-light provided with ways, in combination with the vertical plate carrying the electric lamp the adjusting screw, thumb-nuts and removable yoke, substantially as described, whereby the lamp can be readily applied or removed from the head-light, as set forth. 2nd. In combination with the reflector for a locomotive head-light, an electric lamp, the working parts whereof are supported upon a single plate diagonally disposed in rear and to one side of the reflector, substantially as described. 3rd. In combination with the reflector of a head-light, diagonally arranged support disposed in rear and to one side of the reflector, two slides carrying the carbons, and a shaft connected to the said slides and actuated by the operating mechanism, substantially as described. 4th. In combination with the reflector secured to the sliding board and located within the inclosing case of a head-light, a focussing electric lamp, the operating parts whereof are all mounted upon a vertically adjustable plate supported on a horizontally adjustable and removable plate, substantially as described. 5th. In a locomotive head-light and in combination with the ways secured to the sliding-board, and the removable yoke, the adjustable plate carrying the lamp-operating mechanism and provided with detachable adjusting devices engaging said yoke, to permit the removal of the yoke and the withdrawal of the lamp, substantially as described. 6th. In combination with the reflector, the diagonally arranged plate, the slides mounted and sustained upon said plate and provided with carbon-carriers, projecting the one above and the other beneath the reflector, and mechanism for controlling the movements of said slides to feed the carbons and form the arc, substantially as described. 7th. In combination with the vertical plate provided with guides or ways, the carbon-carriers working therein and provided with teeth, as described, and the rotating operating-shaft passing diagonally between said slides and carrying the pinions for engagement therewith, as and for the purpose set forth. 8th. In combination with the movable carbons and their holders, a tilting and rotating driving-shaft supported at one end by the armature of an electro-magnet included in the lamp-circuit, substantially as described. 9th. In combination with the movable carbons and their holders, a rotating shaft for controlling their movements and pivotally supported at one end, and adapted when tilted to separate the carbons and form the arc, substantially as described. 10th. In combination with the sliding carbon-holders provided with teeth, the pinions engaging therewith and mounted upon a tilting and rotating shaft, substantially as described. 11th. In an arc lamp and in combination with the movable carbons thereof, a rotating tilting shaft carrying pinions for engagement with the carbon-holders supported at one end in a movable bearing whose position is determined by the attraction of an electro-magnet in the lamp-circuit, substantially as described. 12th. In an arc lamp and in combination with driving shaft therefor, the armature supporting one end of the said shaft, and provided with a brake for engagement with a drum fastened to the counter-shaft, and intermediate gearing between the counter-shaft and driving-shaft, whereby the rotation

of the counter-shaft is prevented when the armature is raised, substantially as described. 13th. In an arc lamp, the combination of the main driving-shaft supported at one end in the armature of an electro-magnet, the counter-shaft geared to the main shaft and operated upon by the feed mechanism and a clutch connected to said armature, as and for the purpose set forth. 14th. In combination, with a tilting main driving-shaft, a counter-shaft mounted in fixed bearings and geared to said main driving-shaft, and mechanism, such as indicated, for intermittently rotating the said counter-shaft and through it the main driving-shaft, as and for the purpose set forth. 15th. The combination, in an arc lamp, of a divided circuit in one branch of which is located an electro-magnet for effecting the feeding of the carbons, and a switch operated upon by said electro-magnet, to alternately divert the current through each branch, substantially as described. 16th. The combination, in an arc lamp, of a divided main circuit in one branch of which is located an electro-magnet for controlling the feed of the carbons, a switch operated upon by said electro-magnet for alternately diverting the current through the two branches and an electro-magnet of relatively high resistance located in a circuit around the lamp and operating to shunt the main current through the branch containing the electro-magnet when the resistance of the arc is increased, substantially as described. 17th. In an electric lamp and as a means for regulating the feed of the carbons, a divided main circuit, a feed-actuating electro-magnet located in one of said branches, a cut-out located in the other branch, and a switch actuated by the said electro-magnet to alternately direct the main current through the two branches, substantially as described. 18th. In an electric lamp and as a means for regulating the feed of the carbons, a divided main circuit, a feed-actuating electro-magnet located in one of said branches, a cut-out in the other, an electro-magnet of relatively high resistance located in a shunt-circuit around the lamp and controlling the said cut-out, and a switch mechanism controlled by the first-mentioned electro-magnet for alternately directing the current through either branch when the cut-out is raised, substantially as described. 19th. In an electric lamp and in combination with the feed-actuating mechanism and a divided main circuit, an electro-magnet located in one of said branches, and a cut-out in the other, an electro-magnet located in a shunt-circuit around the lamp and operating the cut-out, and a switch operated by the electro-magnet in the branch of the main circuit, to transfer the current from that branch to the other branch, substantially as described. 20th. In combination with the movable carbons and feeding mechanism therefor, and as a means for actuating said feeding mechanism, the divided circuit, the electro-magnet in one branch, the second branch of relatively low resistance containing a cut-out operated by an electro-magnet in a shunt-circuit, a switch operated by the electro-magnet in the branch circuit, to disconnect the said branch and divert the main current into the other branch without interrupting the same, and the feeding mechanism operated by the switch-lever, substantially as described. 21st. In an arc lamp and in combination with the carbon carrying devices, the pivoted shaft connected to the armature of an electro-magnet in the main circuit, the electro-magnet in one branch circuit, and a second branch circuit of less resistance, a cut-out located in the branch of less resistance, and operated upon by an electro-magnet in a shunt-circuit, a switch operated by the electro-magnet in the branch circuit, to disconnect the said branch and divert the current into the other branch without interrupting the main current, and a feeding mechanism operated upon by the switch lever, substantially as described. 22nd. In combination with the feeding mechanism and with the lever operating the same, the branch circuits, the electro-magnet located in one of said branches and operating on the lever, the contact springs carried by said lever, the three contact-plates connected respectively with the branch circuits and the main line, whereby, as the lever is attracted by the electro-magnet, the main current is gradually diverted from one branch to the other, substantially as described. 23rd. In an electric lamp and in combination with the vibrating lever for actuating the feed mechanism, the three switch-plates insulated from each other and connected, the two outer ones to the respective branch circuits, and the middle one to the main circuit, and the double contact-springs, arranged and operating substantially as described.

No. 28,546. Brush. (Pinceau.)

George H. Kingsley, (assignee of Oron Fish), Cleveland, Ohio, U.S., 20th February, 1888; 5 years.

Claim—1st. In combination with the ferrule or band having the transverse braces provided with the incisions or recesses *d* in their lower edges, the sides of the braces being inclined, the top piece having the grooves on its underside to receive the upper edges of the braces, the centre piece fitting within the recesses *d* of the braces, and the screw connecting the centre piece to the top piece, as set forth. 2nd. In a brush, the ferrule having the transverse braces in combination with the top piece having the transverse grooves on its underside to receive the upper edges of the braces, the centre piece bearing under the braces, the handle arranged on the top piece, and the clamping screw depending from the handle and extending through the top and centre pieces to secure the parts of the brush together, substantially as described. 3rd. The combination of the ferrule having transverse braces provided with the incisions or recesses *d* in their lower edges, with the centre piece adapted to fit in the said recesses, and the top piece on the upper edges of the braces, and means to clamp the said centre piece and top piece together, substantially as described.

No. 28,547. Brush. (Pinceau.)

George H. Kingsley, (assignee of Oron Fish), Cleveland, Ohio, U.S., 20th February, 1888; 5 years.

Claim—1st. In combination with the ferrule or band having an internal flange or shoulder, the top piece fitted in the ferrule or band and resting at the edges of the bottom on the flange or shoulder, the top piece having a crowning or bulged portion at the bottom, which crowning portion projects through the space left by the flange or shoulder, as set forth. 2nd. In combination with the wedge-shaped or convex centre piece, the top piece having a bulged crowning or convex bottom arranged with its curved face opposite to the curvature

of the centre piece, as set forth. 3rd. In combination with the ferrule or band having an external flange or shoulder, the top piece resting on the flange or shoulder and having its bottom made convex or crowning, and projecting through the space between the flange or shoulder, and the centre piece having a convex upper face arranged opposite to the bottom of the top piece, as set forth.

No. 28,548. Apparatus for Drawing Aerated Liquids from Founts or Reservoirs. (Appareil pour tirer les eaux gazeuses des cuves ou reservoirs.)

Evan Rowlands, (assignee of Thomas Ferguson), Melbourne, Victoria, 20th February, 1887; 5 years.

Claim—1st. In apparatus for drawing off aerated liquid from founts or reservoirs, the use of an intermediary chamber into which the liquid under pressure is led and, while therein, allowed to blow out its excess of pressure before being drawn off into a drinking vessel, substantially as herein described and explained. 2nd. Constructing such intermediary chamber in one or two parts, and of either glass or metal, and securing it to the stand pipe of the apparatus above the operating valves, substantially as herein described and explained. 3rd. In apparatus for drawing off aerated liquid from founts or reservoirs, the arrangement of the three valves controlled by the revolution of the one hand wheel and designed to govern the blow-off from the intermediary chamber, the supply from the fount and the supply leading to the spout, substantially as herein described and explained. 4th. In an apparatus for drawing off aerated liquid from founts or reservoirs, the general combination and arrangement of the stand and the intermediary chamber, the three valves above claimed, and the hand wheel, and other with or without the small tap at the side of the stand pipe, for drawing off liquid under pressure, substantially as herein described and explained.

No. 28,549. Mechanism for Manufacturing Augers. (Machine pour fabriquer les tarières.)

Andrew Laundry, Côte St. Paul, Que., and Henry H. Warren, Mason, N.Y., U.S., 20th February, 1888; 5 years.

Claim—1st. The combination of the dies A, each having diagonal parallel ridges B, arranged face to face, substantially as and for the purposes set forth. 2nd. The combination of the dies A, each having diagonal parallel ridges B and a margin F, arranged face to face, substantially as and for the purposes set forth. 3rd. The combination of the dies A, each having diagonal parallel ridges B and a margin G, arranged face to face, substantially as described for the purposes set forth. 4th. The combination of the dies A, each having ridges B and margins F and G, arranged face to face, substantially as and for the purposes set forth.

No. 28,550. Hydrocarbon Burning Apparatus. (Foyer à hydrocarbures.)

Edward C. Burgess, Philadelphia, Penn., U.S., 20th February, 1888; 5 years.

Claim—1st. In an apparatus for burning hydrocarbon oils, the combination of an inlet pipe C¹ with a filter C², a heating pipe C, an equalizing chamber C³ and the injector E, all substantially as shown. 2nd. In an apparatus for burning hydrocarbon oils, the combination of a shelf or deflector B, with an igniter or baffle plate B¹ and injector E, substantially as shown. 3rd. The combination of the heating pipe C, equalizing chamber C³ and injector E, substantially as shown. 4th. The combination of the injector E, heating pipe C, equalizing chamber D, oil supply pipe F, igniting tile B¹ and contracted air inlet G, substantially as shown.

No. 28,551. Apparatus for the Manufacture of Gas. (Appareil à gaz.)

Alexander C. Humphreys, Philadelphia, Penn., U.S., 21st February, 1888; 5 years.

Claim—1st. In combination with a generator and fixing chamber, a retort chamber containing retorts for the distillation of bituminous coal, and a system of gas passages, one or more leading into the retort chamber and one or more direct to the fixing chamber, whereby the supply of gases for each chamber is independent of the other. 2nd. In combination with a generator and fixing chamber, a retort chamber containing retorts for the distillation of bituminous coal and having an independent stack or gas escape and a system of gas passages, one or more leading into the retort chamber, and one or more direct to the fixing chamber, whereby the supply of gases for each chamber is independent of the other, and combustion may be continued in the retort chamber while gas is being stored. 3rd. In combination with a generator and a fixing chamber, a retort chamber containing retorts for the distillation of bituminous coal and provided with gas supply passages independent of the passages leading to the fixing chamber, and having an independent gas escape provided with means for creating a strong draught through the chamber. 4th. In combination with a generator and a fixing chamber, a retort chamber containing retorts for the distillation of bituminous coal, and having a gas supply passage independent of the passages leading to the fixing chamber, and an adjustable valve, whereby the quantity of gas admitted to said retort chamber may be regulated at will. 5th. In combination with a generator and fixing chamber, a retort chamber containing retorts for the distillation of bituminous coal, and having open ended retorts opening into a chamber or passage J, a gas passage leading to the combustion chamber of the retort chamber, and gas passage leading to the fixing chamber situated between the open ends of the retorts, and the gas passage leading to said combustion chamber, whereby the coal gas are substantially all conveyed to said fixing chamber. 6th. In combination with a generator A and fixing chamber C, the retort chamber B having a passage or chamber J, situated over the generator and divided from the combustion chamber by a wall E, through which

the open ended retorts D project, the passage L L₁ L₂ leading into the retort chamber and having valve M, the independent stack H and air pipes K₁, K₂, and the gas passages N leading to the fixing chamber.

No. 28,552. Animal Trap. (Pidge.)

Alonzo Becker, Union, Penn., U.S., 21th February, 1883; 5 years.

Claim.—1st. The combination, in an animal-trap, of a base portion provided at its ends with outer arms *a*, having recesses in their under edge, and with inner arms *a*₁ having recesses in their upper edge, a transverse bar extending across the rear end of the base and seated in said recesses, a curved spring arm mounted upon said bar by means of coils and retained between the respective arms *a* and *a*₁, and trip mechanism, substantially as set forth. 2nd. The combination, in an animal-trap, of an approximately U-shaped base portion provided with a longitudinal groove in its upper face, and with inner and outer arms *a*, *a*₁, at its ends, a transverse bar mounted in said arms, a curved spring arm corresponding to said groove and normally received within the same, said arm having bearings upon the bar between the respective arms *a*₁ and *a* and trip mechanism, substantially as set forth. 3rd. An animal-trap comprising a base portion having arms at its ends, a transverse bar mounted in said arms, a rod *a*₂ connecting the arms *a*₁, and an approximately U-shaped arm or bail D, having end bearings upon the rods *a*₂ and formed with an angle bearing against the transverse bar, whereby the bail may be folded under the trap, substantially as set forth. 4th. The combination, in an animal-trap, of a base portion having inner and outer arms *a*, *a*₁, at its ends, a transverse bar mounted upon said arms, a spring arm having coils mounted upon said bar between the respective arms *a* and *a*₁, an upright bail D connected with the base portion and bearing against the transverse bar, a trigger mounted and bearing upon said bar, and arm *d*₂ for engaging the trigger, substantially as set forth. 5th. The combination, in an animal-trap of an approximately U-shaped base portion provided at its ends with outer arms *a*, having recesses in their under edge, and with inner arms *a*₁, having recesses in their upper edge, a transverse bar seated in said recesses, a curved spring arm having coils mounted upon said bar between the respective arms *a*₁, *a*, a rod connecting the inner arms *a*₁, a bail D with an angle bearing against the transverse bar, a trigger mounted and bearing upon said bar, and an arm having a hook-shaped end for engaging the curved spring arm, substantially as set forth.

No. 28,553. Mowing Machine. (Fauchouse.)

Tobias Fox, Owen Sound, Ont., 24th February, 1883; 5 years.

Claim.—1st. The combination of the single drive wheel B with the jointed iron frame A, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the single drive wheel and the frame A, of the gearing wheels E, F, H and I, and their necessary connections, substantially as and for the purpose hereinbefore set forth.

No. 28,554. Harvester. (Moissonneuse.)

William P. Hale, Rochester, N. Y., U.S., 24th February, 1883; 5 years.

Claim.—1st. The combination of the main frame, the driving roller D₁, of the elevating apron journalled in the main frame at the front and rear thereof, the coupling links having pivotal supporting connection at their upper ends, with the main frame at the front and rear thereof, and vibrating about the axis of said roller, the folding grain platform having joint connection with the coupling links at their lower ends, and means for raising and lowering the grain platform, whereby, in operation, the height of cut may be adjusted, and for transportation the platform be folded up to the main frame, substantially as set forth. 2nd. The combination of the main frame, the elevating apron driving roller D₁, the flanged and bossed bearings for its front and rear journals, and the coupling links pivoted to the bearing bosses, substantially as and for the purpose set forth. 3rd. The combination of the main frame, the grain platform having jointed connection therewith, the endless carrier of the grain platform, the front and rear uprights of the main frame, the inner elevating apron, its driving roller journalled in said uprights, actuating mechanism operating upon said driving roller at rear, the narrower outer elevating apron of a width less than the average length of grain to be elevated, the driving roller of the outer elevating apron journalled at front in the front frame upright, the bracket in which the driver roller of the outer elevating apron is journalled at rear, and gearing connecting the driving rollers of the inner and outer aprons at front, substantially as and for the purposes set forth. 4th. The combination of the main frame, the inner elevating apron, its driving roller, the sprocket pulley on the rear journal of said roller, its driving chain, the narrower outer elevating apron, its driving roller, the apron frame vibrating about this roller, the pinion on the front journal of the driving roller of the outer elevating apron, the pinion on the front journal of the driving roller of the inner elevating apron, and the bearing bracket for the rear journal of the driving roller of the outer elevating apron, substantially as and for the purpose set forth. 5th. The combination of the main frame, the grain platform having jointed connection therewith, the driving roller of the platform carrier, its rear journal having bearing connection with the platform, the reel driving sprocket pulley on said journal, the reel driving shaft above the grain platform, the sprocket pulley thereon, its driving chain, the post having bracing connection with the platform pivotally supported at its lower end by the rear journal of the driving roller of the platform carrier, and provided with a bearing at its upper end for the sprocket pulley on the reel driving shaft, the reel, means for supporting it, and the driving connection between the reel and its driving shaft, substantially as and for the purpose set forth. 6th. The combination of the main frame, the coupling links having pivotal supporting connection with the main frame, the grain platform having jointed connection with the coupling links, the reel driving shaft, the post F₇ for this shaft having pivotal supporting connection with the platform at rear, mechanism for actuating the reel driving shaft, and the jointed brace connecting its post with the platform, substantially as and for the purpose set forth. 7th. The combination of the main frame, the grain platform, the inner

divider, the lugged casting secured thereto, the front coupling links having pivotal supporting connection with the main frame inside the driving wheel, the pivot bolt by which these links are jointed to the lugged casting, and the rear coupling link having pivotal supporting connection with the main frame inside the driving wheel, and pivotally connected with the platform at rear in the axial line of the pivot bolt, by which the lugged casting is connected with the front coupling links, substantially as and for the purpose set forth. 8th. The combination of the main frame, the grain platform, the front and rear coupling links having jointed connection with the platform, and pivotal supporting connection with the main frame, the hinged tongue, the tongue brace jointed to the front coupling link, and means for rocking the main frame, substantially as and for the purposes set forth. 9th. The combination of the main frame, the driving roller of the inner elevating apron, the coupling links of angular form having pivotal supporting connection with the main frame and vibrating about the axis of said roller, the driven roller of the elevating apron mounted in bearings connected with the coupling links at their horizontally extending lower portions, the grain platform, the platform carrier and its driving roller, in the axial line of which the coupling links have pivotal connection with the platform in, or about in the horizontal plane of the driven roller of the elevating apron, substantially as and for the purpose set forth. 10th. The combination of the main frame, the roller D₁ of the inner elevating apron, the front coupling links or link having pivotal supporting connection with the main frame and vibrating about the axis of said roller, the sectional adjustable rear coupling link also having pivotal supporting connection with the main frame and vibrating about the axis of said roller, the grain platform having jointed connection with the coupling links, the endless carrier of the platform and the driving roller thereof, substantially as and for the purpose set forth. 11th. The combination of the main frame, the grain platform having jointed connection therewith, the post F₇ having supporting connection with the rear of the platform, the sprocket pulley supported in a bearing at the upper end of the post, the reel driving shaft having universally jointed sliding connection with the sprocket pulley, the reel post, the reel shaft having vertically adjustable supporting connection with the reel post, and with the vertical movements of which the reel driving shaft partakes at its front end, the reel head and gearing connecting it with the reel driving shaft, substantially as and for the purpose set forth. 12th. The combination of the main frame, the folding grain platform having jointed connection therewith, the post F₇ having pivotal supporting connection with the rear of the platform, the reel driving shaft having supporting connection with said post, the detachably supported reel post, the reel shaft having supporting connection with the reel post, the bearing bracket for the front end of the reel driving shaft supported by the reel shaft, and the detachable reel head, substantially as and for the purpose set forth. 13th. The combination of the main frame, the folding grain platform having jointed connection therewith, the detachably supporting reel post, the support at the front of the main frame for the lower end of the reel post, when the platform is folded, the reel shaft, its carrying bracket on the reel post, the reel driving shaft, its bearing bracket connected with the reel shaft, and the post having pivotally supported connection with the rear of the platform by which the rear end of the reel driving shaft is supported, substantially as and for the purpose set forth. 14th. The combination of the reel post, the reel shaft, its carrying bracket vertically adjustable on the reel post and composed of the adjustably connected sections, the chain connected to the carrying bracket, the upper and lower pulleys of the reel post about which the chain passes, and controlling mechanism to be operated by the driver with which the chain is connected, substantially as and for the purpose set forth. 15th. The combination of the reel post, the adjustable bracket thereon, the reel shaft projecting inwardly from the reel post and carried by said bracket, the reel driving shaft, the curved bracket having at its rear end the bearing sleeve for the front end of the reel driving shaft, and through the front end of which bracket, at a right angle with said bearing sleeve, the projecting reel shaft passes, and the post supporting the rear end of the reel driving shaft, substantially as and for the purpose set forth. 16th. The combination of the intermittently actuated rotary packer shaft, its clutch, the clutch-tripper P₁, the rigidly supported stud p by which the clutch-tripper is pivotally supported at its lower end, the onewise moving connecting rod actuating the clutch-tripper, the pawl arm p₁ secured at one end to the clutch-tripper, and projecting forwardly therefrom and laterally thereto, and the ratchet-wheel on the packer shaft acted upon by the forward end of the pawl arm, substantially as and for the purpose set forth. 17th. The combination of the receiving platform, the discharger shaft above this platform, the vertically swinging onewise reciprocating discharger arms, the intermittently operated binder actuated shaft, the sprocket pulley thereon, the chain driven thereby, the sprocket pulley on the discharger shaft, the cam on the discharger shaft, the grain retaining arms projecting at their ends above the receiving platform, and mechanism connected with the rock shaft by way of which it is controlled by the cam of the discharger shaft, substantially as and for the purpose set forth. 18th. The combination of the reel shaft, horizontal or nearly so, the reel driver and the reel head rotated by friction contact with the driver and having the hub adapted to rock or be tilted in a plane transverse to that of its revolution, substantially as and for the purpose set forth. 19th. The combination of the reel shaft, horizontal or nearly so, the reel driver having the peripheral face flange, the reel head having the peripheral flange and the flaring hub, the reel bosses, and the supporting and bracing arms connecting them with the reel head, substantially as and for the purpose set forth.

No. 28,555. Car Heating Apparatus.

(Appareil de chauffage des chars)

James H. Sewall, Portland, Me., U.S., 24th February, 1883; 5 years.

Claim.—1st. In a car heating apparatus, the steam supply pipe and the circulating pipes C, combined with a valve controlling the passage of steam from the supply pipe to the circulating pipes, said valve consisting of the valve cam b, the inlet and outlet ports 3, 4, communicating with the steam supply pipe, and the inlet and outlet ports 5, 6, communicating with the circulating pipes, two disks d, d,

moving simultaneously in the valve-case *b* and co-operating with the said ports to control the passage of steam to the next car either direct or through the circulation pipes, and drip passages in communication with the circulating pipes, and the stop *e* within the valve-case, for limiting the movement of the disks in the direction in which they are moved when the steam is to be shut off from the circulation pipes, substantially as described. 2nd. In a car heating apparatus, the main steam pipe passing from end to end of the car, and the circulation pipes within the car, and a single valve or controlling device for controlling the passage of steam that it may enter the main circulation pipes or pass onward directly through the main steam pipe, and the drip passages leading from the valve-case for the escape of water of condensation from the main circulating pipes, combined with an auxiliary reservoir *R* to receive the water of condensation, and the controlling cock or inlet passage for the reservoir *R*, substantially as described. 3rd. In a car heating apparatus, the steam supply pipe and the circulation pipes, combined with a valve controlling the passage of steam from the supply pipe to the circulating pipes, said valve consisting of the valve-case *b*, inlet and outlet ports *3, 4*, communicating with the steam supply pipe, and inlet and outlet ports *5, 6, 6*, communicating with the circulating pipes, two disks *d, d*, attached to a single valve stem and moving simultaneously to include between them the inlet port *3* and the outlet ports *5, 5*, or the inlet and outlet ports *3, 4*, and the drip passages communicating with the circulating pipes, substantially as described. 4th. In a car heating apparatus, the steam supply pipe and the circulating pipes combined with a valve controlling the passage of steam from the supply pipe to the circulating pipes, said valve consisting of the valve case *b*, inlet and outlet ports *3, 4*, communicating with the steam supply pipe, and inlet and outlet ports *5, 5, 6, 6*, communicating with the circulating pipes, two disks *d, d*, attached to a single valve stem and moving simultaneously to include between them the inlet port *3* and the outlet ports *5, 5*, or the inlet and outlet ports *3, 4*, the drip passages communicating with the circulating pipes and the plug or stop *e*, and arm *20* for limiting the movement of the disks in one and the other direction, and means, substantially as described, operable from within the car for moving the disks, substantially as described. 5th. In a car heating apparatus, the steam supply pipe and circulating pipes, and the controlling valve for controlling the passage of steam to the next car direct or through the circulating pipes, and thence to the next car, and the drip passages for conveying the water of condensation from the circulating pipes, combined with the auxiliary boiler composed of the outer shell or water reservoir into which the drip passages lead, the fire-pot contained within the outer shell or reservoir, and the combustion chamber surrounding the said shell or case, and the steam trap connected with one of the drip passages at a point intended for the water level in the water reservoir, substantially as described. 6th. In a car heating apparatus, the steam supply pipe and the circulating pipes, combined with a valve controlling the passage of steam from the supply pipe to the circulating pipes, and valve consisting of the valve-case *b*, the inlet and outlet ports *5, 6*, communicating with the circulating pipes, the inlet and outlet ports *3, 4*, located a short distance apart between the ports *5, 6*, and communicating with the steam supply pipe, and two disks *d, d*, moving simultaneously in the valve case and co-operating with the parts to include between them in one position, the ports *3* and *5*, and when in the other position, the ports *3* and *4*, whereby the passage for the steam is controlled to the next car direct, or to the next car through the circulating pipes, substantially as described. 7th. In an apparatus for heating cars, the main steam pipe, steam cylinder with which the main steam pipe is connected, and the circulating pipes leading from the steam cylinder, combined with the auxiliary boiler or reservoir comprising an outer shell or casing *b*, and the fire-pot *b* placed within it, to leave a space of sufficient size to permit the water to circulate freely around it, substantially as and for the purpose set forth. 8th. In a car heating apparatus, the steam supply pipe and the circulating pipes, combined with a valve controlling the passage of steam from the supply pipe to the circulating pipes, said valve consisting of the valve case, the inlet and outlet ports communicating with the steam supply pipe, and the inlet and outlet ports communicating with the circulating pipes, two disks *d, d*, moving simultaneously in the valve case and co-operating with the parts to control the passage of steam to the next car direct, or to the next car through the circulating pipes, the two gauge cocks *12, 13*, and the cock *14* connected with one of the drip passages for emptying the water reservoir, substantially as described. 9th. The boiler or reservoir consisting of the outer shell or water reservoir *b* gradually increasing in diameter from the base to the top thereof, and the combustion chamber *b* surrounding the said water reservoir *b*, combined with the fire-pot *b* closed at the top and of similar shape, but of lesser dimensions than the reservoir *b* and contained in said reservoir, and the pipes *b* connecting the fire-pot with the combustion chamber, substantially as described. 10th. A circulating system for cars consisting of two pipes extending from the centre of the car in opposite directions toward the ends thereof, and inclining upwardly, one or more connecting pipes connecting the outer or extreme ends of the two upwardly inclined pipes, and a receiver at the centre of the car, for receiving the water of condensation from the entire circulatory system, substantially as and for the purpose specified. 11th. In a circulatory heating system for cars, two independent sets of circulation pipes, one at each side of the car, each set having its lowermost pipes pitched and terminating at or near the centre of the car, and connecting pipes joining each set with a single source of supply, substantially as described. 12th. The main controlling valve having the inlet and outlet ports *3, 4*, combined with the controlling device consisting of an auxiliary valve having inlet and outlet ports *31, 32* and the ports *33, 34*, communicating with the main controlling valve through the ports *3, 4*, substantially as described. 13th. The main controlling valve having the inlet and outlet ports *3, 4*, combined with the auxiliary valve comprising the valve-case *35*, having the inlet and outlet ports *31, 32* and the ports *33, 34*, the disc *36* and the valve-stem for moving it, and means controlled from within the car for moving said valve-stem, substantially as described. 14th. The main controlling valve having the inlet and outlet ports *31, 32*, and ports communicating with the main valve disc or piston moving within the auxiliary valve case with relation to the ports, and means for moving it controlled from within the car, combined with an indicator for determining the posi-

tion of the disc or piston of the auxiliary valve case, substantially as described. 15th. The main controlling valve having the inlet ports, the auxiliary valve with which the inlet and outlet ports of the main valve communicate, said auxiliary valve having main steam supply pipe, the piston or disc *37* moving within the auxiliary valve case with relation to the ports, and means for moving it combined with the port *38* and the steam trap *T*, substantially as and for the purposes described.

No. 28,556. Railway Wing Snow Plough.

(*Charrue à neige à pelle de chemin de fer*)

James H. Russell, St. John, N. B., 21th February, 1888. 5 years.

Claim.—1st. The chisel-shaped steel bit *A* in combination with the boiler iron plate *B* firmly rivetted, to support the bit *A*. Also the steel flanges *C* on the side of girders *E*, substantially as before mentioned and described. 2nd. In a railway wing snow-plough, the deep concave side *E*, to pass the snow without compressing, and leaving it in condition to be gathered up and carried away by the wing elevators, substantially as hereinbefore described. 3rd. In a wing elevator snow-plough, the recesses *M, M*, in the body of the plough, to receive the wings *N, N* carrying the elevators *J, J, J*, substantially as hereinbefore described. 4th. In a wing snow-plough, the derrick posts *S, S* and the buckstay *G*, and swinging rods with turnbuckles *H*, to operate the wing elevators, substantially as described. 5th. In a wing plough truck frame, the double bearing journal carrying saddle boxes *X, X, X*, supporting the iron or steel housings *V, V*, the pipe boxes *P, P, P, P*, in the outside trusses, substantially as described. 6th. In a wing plough truck frame, the steel bed plates *T* and the metal centre bed *U* firmly bolted to the same, as hereinbefore described. 7th. In a wing snow-plough truck frame, the heavy iron or steel girder *E*, passing under the metal plates *T*, and resting on metal block *H*, in the outside trusses *W, W*, to support the centre of bed plates, as herein described. 8th. In a wing snow-plough, the curving wheel *H* placed in metal chair *I*, carrying the side of the wing elevator, substantially as before described.

No. 28,557. Appliance for Keeping Tobacco Damp. (*Appareil pour conserver le tabac humide.*)

George F. S. Ruthven, Toronto, Ont., 21th February, 1888. 5 years.

Claim.—The method of keeping tobacco or other substance damp by means of the jar with perforated bottom, and the bowl with liquid or moistened porous material, substantially as above described.

No. 28,558. Portable Cleat. (*Taqet mobile.*)

Charles P. Hawley, New York, N. Y., U. S., 21th February, 1888; 5 years.

Claim.—A cleat constructed of one piece of wire consisting essentially of a body portion, a transverse guide attached to the underside of the body extending outwardly from both sides, an eye in one end of the body, a vertical twisted shank integral with said body and outwardly extending diverging arms integral with said shank, substantially as shown and described.

No. 28,559. Railway Gate.

(*Barrière de chemin de fer.*)

George A. Hall, Portland, Me., U. S., 21th February, 1888; 5 years.

Claim.—1st. In a gate operating mechanism, the combination, with a gate, of a cylinder, a piston therein, operatively connected to said gate, a valve chest *c* having ports connected to opposite ends of said cylinder, a main valve in said chest to control the admission of air or other medium into the opposite ends of the cylinder, and an auxiliary valve having a vent passage to effect a gradual escape of air, or other medium, compressed in the said cylinder, substantially as described. 2nd. In a gate operating mechanism, the combination, with a gate, of an upright cylinder, a piston therein having a rack *61*, a toothed sectorial connected to the gate and meshing with the said rack, a main valve connected to the opposite ends of the said cylinder, and an auxiliary valve for each end of the said cylinder, provided with a vent to effect a gradual escape of air, or other medium, compressed within the said cylinder, substantially as described. 3rd. In a gate mechanism, the combination, with a gate, of a cylinder, a piston therein, operatively connected to said gate, a main valve connected to the opposite ends of the said cylinder and controlling the operation of the piston therein, and an auxiliary valve having a vent to effect a gradual escape of air, or other medium, compressed in the said cylinder, substantially as described.

No. 28,560. Washing Machine.

(*Machine à blanchir.*)

Thomas Clarko, Truro, N. S., 21th February, 1888; 5 years.

Claim.—1st. A washing machine having a vertical spindle provided with cross-bars *N* and stirrers *F*, and the revolving rollers *H* and *G*, as shown and described for the purpose set forth. 2nd. The combination, in a washing machine, of vertical rollers *H* round the sides of the machine, and horizontal *G* on the bottom, as shown and described for the purpose set forth. 3rd. In a washing machine, the combination of vertical spindle *E*, cross-bars *N*, stirrers *F* and the vertical revolving rollers *H*, as shown and described for the purpose set forth. 4th. In a washing machine, the combination of vertical spindle *E*, cross-bars *N*, stirrers *F* and the horizontal revolving rollers *G*, the whole as shown and described for the purpose set forth.

No. 28,561. Lantern. (*Lanterne.*)

Thomas A. Gray and William A. Clappell, Hamilton, Ont., 23th February, 1888; 5 years.

Claim.—1st. In a lantern, the combination of the collar *H* and side wires *D* with the disk *B*, to hold the globe *A* firmly between said disk

and the canopy E, as described. 2nd. In a lantern, the combination of the springs F with the disk B, and the body P of the lantern, to raise the globe a up off the burner and hold it in that position, as described. 3rd. In a lantern, the combination of the prosser rods G, G, canopy E, disk B and springs F, in connection with the catch k, with the pin L, to lower the globe a down over the burner and lock it in that position, as described, all operating substantially as herein set forth.

No. 28,562. Carpet Stretcher.

(*Tendeur de tapis.*)

William H. Meyers, Toronto, Ont., 25th February, 1888; 5 years.

Claim.—1st. The combination of a ratchet bar having a prong at one end, a plate having curved teeth, a laterally extending arm, upwardly projecting keepers and a spring bracket, a lever pivoted to said spring bracket and having a pawl at its lower end, and having a dog or pawl pivoted to said lever above its fulcrum, substantially as and for the purpose set forth. 2nd. The combination, with the operating lever having a tapering dovetailed recess at its upper end, of a handle wedge-shaped at its lower end, to enter said recess, and equipped with a tack hammer at its upper end, and at its lower end with a laterally projecting bracket having a notch for drawing tacks, as set forth.

No. 28,563. Hen's Nest. (*Nid de poule.*)

Thomas W. Russell, Union Bridge, Md., U.S., 25th February, 1888; 5 years.

Claim.—In a hen's nest, the following elements in combination, viz: the box A provided with the stand I and having the fixed platform H, with its outer end separated from the front of the box so as to form the space k, levers B, B, egg tray C detached from the box and suspended from the short arms of the levers, and the door D attached to the long arms of the levers and provided with the opening J, and adapted to slide in the space which extends across the box, substantially as and for the purpose specified.

No. 28,564. Art or Process of Wall and Ceiling Decoration. (*Procédé d'ornementation des murs et plafonds.*)

James S. Henderson, (assignee of Alfred Ottaway), Toronto, Ont., 25th February, 1888; 5 years.

Claim.—The process of working paper upon a prepared linen or other fabric as a back, and painting and decorating said paper in suitable sizes as a decoration for walls, ceilings and other surfaces.



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

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| <p>1057. F. M. LECHNER and J. A. JEFFREY, 3rd 5 years of No. 8492, from the 4th day of March, 1888. Improvements on Mining Machines, 2nd February, 1888.</p> <p>1058. THE STURTEVANT MILL CO. (assignee), 2nd 5 years of No. 16,314, from the 16th day of February, 1888. Improvements in Attrition Mills, 3rd February, 1888.</p> <p>1059. THE STURTEVANT MILL CO. (assignee), 2nd 5 years of No. 16,356, from the 22nd day of February, 1888. Improvements in Attrition Mills, 3rd February, 1888.</p> <p>1060. THE GRIP PRINTING and PUBLISHING CO. (assignee) 2nd 5 years of No. 18,624, from the 7th day of February, 1888. Improvements in Duplicate Memorandum or Sale Slips, 6th February, 1888.</p> <p>1061. T. F. GOULETTE, 3rd 5 years of No. 8539, from the 12th day of March, 1888. Improvements in Ice Scrapers, 7th February, 1888.</p> <p>1062. H. SHOREY & CO (assignees), 2nd 5 years of No. 16,547, from the 20th day of March, 1888. Improvements in Overcoats, 7th February, 1888.</p> <p>1063. THE ELECTRICAL ACCUMULATOR CO. (assignee), 2nd 5 years of No. 16,553, from the 21st day of March, 1888. Improvements on Secondary Cells and Batteries or Apparatus for Storing Electricity, 7th February, 1888.</p> <p>1064. E. E. GOLD, 2nd 5 years of No. 16,359, from the 22nd day of February, 1888. Improvements on Steam Heaters, 10th February, 1888.</p> <p>1065. THE CASSIDY COUPLING CO (assignee), 2nd 5 years of No. 16,285, from the 14th day of February, 1888. Improvements on Pipe or Hose Couplings, 11th of February, 1888.</p> | <p>1066. C. E. PATRIC, 2nd 5 years of No. 16,335, from the 20th day of February, 1888. Improvement on Seed Planting Machines, 14th February, 1888.</p> <p>1067. W. McDONALD, 2nd 5 years of No. 9738, from the 11th day of March, 1888. Improvements on Circular Gang Saws and Edging Machines, 14th February, 1888.</p> <p>1068. R. McLAUGHLIN, 2nd 5 years of No. 17,918 (re-issue of No. 16,208), from the 16th day of February, 1888. Improvements on Buggy Cops, 14th February, 1888.</p> <p>1069. H. E., W. T. and J. A. TUPPER and A. and C. W. ROSS, 2nd 5 years of No. 16,362, from the 22nd day of February, 1888. Improvements in Evaporators, 22nd February, 1888.</p> <p>1070. R. GRATZEL, 2nd and 3rd 5 years of No. 27,948, from the 7th day of November, 1892. Improvements in the Process of Producing Metals of the Alkaline Earths, and in the Apparatus to be used therefor, 24th February, 1888.</p> <p>1071. N. LACERTE, 2nd 5 years of No. 16,515, from the 17th day of March, 1888. Improvements in the Art of Curing Diphtheria and other Diseases of the Throat, 24th February, 1888.</p> <p>1072. THE NEPTUNE FOG HORN CO. (assignee), 2nd 5 years of No. 20,430 (being a re-issue of No. 8499), from the 8th day of March, 1888. Improvements in Signals or Fog Horns, 25th February, 1888.</p> <p>1073. THE ST. ALBANS MANUFACTURING CO. (assignee), 2nd 5 years of No. 8464, from the 28th day of February, 1888. Improvements on Drying Apparatus, 27th day of February, 1888.</p> <p>1074. A. W. SWIFT, 2nd 5 years of No. 16,545, from the 20th day of March, 1888. Improvements in Lubricators, 27th February, 1888.</p> <p>1075. C. POWELL, 2nd 5 years of No. 16,410, from the 28th day of February, 1888. Improvements on Pumps, 28th February, 1888.</p> |
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| <p>3086. THE CALIFORNIA FIG SYRUP COMPANY, Reno, Nevada, San Francisco, California, and Louisville, Kentucky, U.S.A. Medical Compounds. 1st February, 1888.</p> <p>3087. MASSÉ, WOOD & CO., Montreal, Que. Cigars. 1st February, 1888.</p> <p>3088. KNIGHTS OF LABOUR in CANADA, per George Collier, their Representative, Hamilton, Ont. GENERAL Trade Mark. 1st February, 1888.</p> <p>3089. GEORGE TURNER BEARD, Montreal, Que. GENERAL Trade Mark. 1st February, 1888.</p> <p>3090. GRANBY RUBBER COMPANY, Granby, County of Shefford, Que. Rubber Overshoes. 1st February, 1888.</p> <p>3091. JOHN VERNER, Toronto, Ont. Aerated Waters. 7th February, 1888.</p> <p>3092. CLARK BRO'S., Toronto, Ont. Aerated Waters. 7th February, 1888.</p> <p>3093. LE PAGE MANUFACTURING COMPANY, (Limited), Halifax, N.S. Liquid Glues, Cements and Mucilages. 7th February, 1888.</p> <p>3094. VINCENT C. PRICE, on behalf of the PRICE BAKING POWDER COMPANY, Chicago, Illinois, U. S. A. Baking Powder. 7th February, 1888.</p> <p>3095. VINCENT C. PRICE, on behalf of the PRICE BAKING POWDER COMPANY, Chicago, Illinois, U. S. A. Flavoring Extracts. 7th February, 1888.</p> <p>3096. LEVER BROTHERS, Warrington, County of Lancaster, England. Soap. 8th February, 1888.</p> | <p>3097. JONAS BROOKS AND BROTHERS, of Meltham Mills, near Huddersfield, County of York, England. Sewing Cotton Thread. 9th February, 1888.</p> <p>3098. JONAS BROOKS AND BROTHERS of Meltham Mills, near Huddersfield, County of York, England. Sewing Cotton Thread. 9th February, 1888.</p> <p>3099. WILLIAM RADAM, Austin, Texas, U.S.A. Medical Compounds. 13th February, 1888.</p> <p>3100. PROCTOR C. PETTINGILL, Glencoe, Ont. Patent Medicines. 13th February, 1888.</p> <p>3101. GEORGE BELL SILLS, Napawoc, Ont. Compound to be used medicinally and as a beverage when diluted. 20th February, 1888.</p> <p>3102. J. TETRAULT ET COMPAGNIE, Montreal, Que. Tabac à Chiquer. 21 Fevrier, 1888.</p> <p>3103. C. MACHEN & HUDSON, Liverpool, England. Beer. 21st February, 1888.</p> <p>3104. BENJAMIN L. MASON and WILLIAM R. ARMSTRONG, Detroit, Michigan, U.S.A. Clothing for men and horses. 22nd February, 1888.</p> <p>3105. CHARLES RUNK, Montreal, Que. Cigars and cigarettes. 23rd February, 1888.</p> <p>3106. EUSÉBE MORIN, ALEXIS DION, LOUIS BARBEAU and FRANÇOIS NAVIER ALPHONSE BOISSEAU, faisant affaires sous la raison sociale de LEDOUX & CIE., St. Hyacinthe, Que. Eau minérale naturelle. 23 Fevrier, 1888.</p> |
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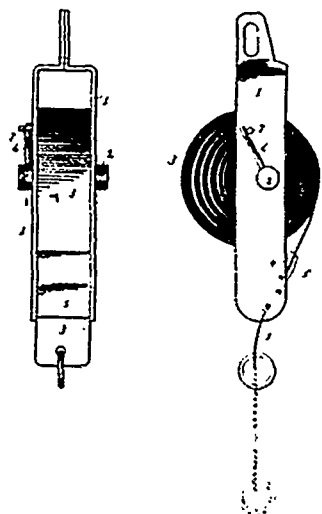
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CANADIAN PATENT OFFICE RECORD.

ILLUSTRATIONS.

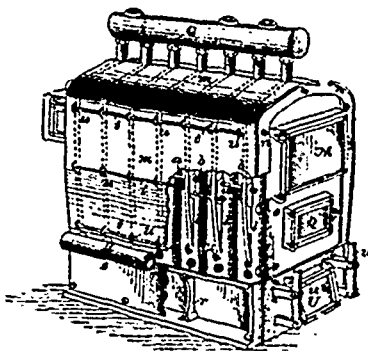
Vol. XVI.

FEBRUARY, 1888.

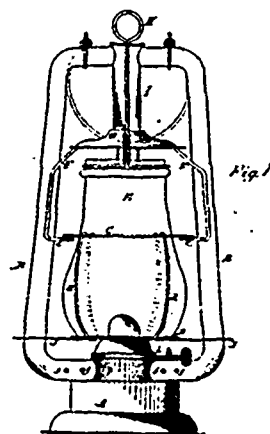
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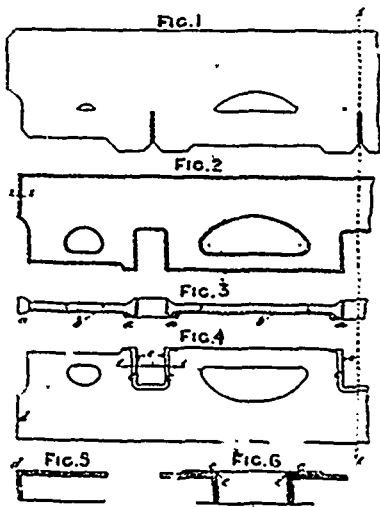
28420 Richardson's Hanging Device.



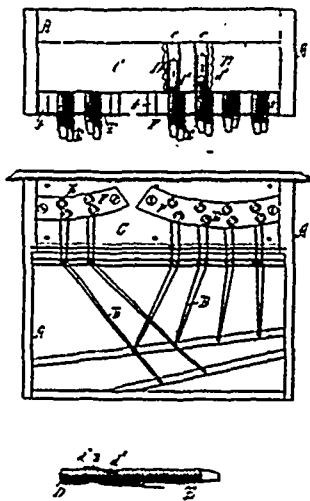
28421 Mercer's Steam Boiler.



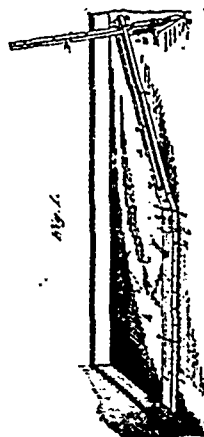
28422 Schultz's Tubular Lantern.



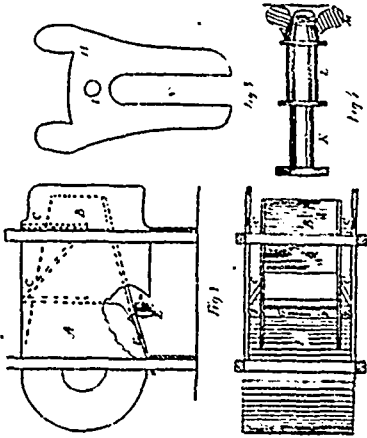
28423 Fox's Frame Plate for Rolling Stock.



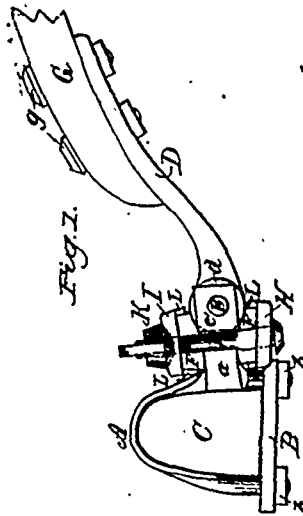
28424 Spencer's String Fastening for Musical Instruments.



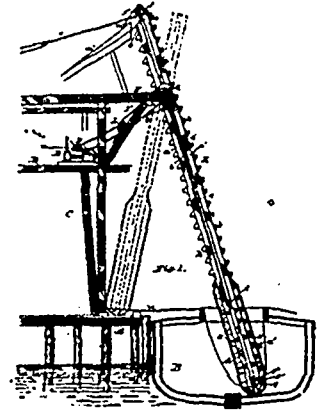
28425 Manter's Carpet Stretcher.



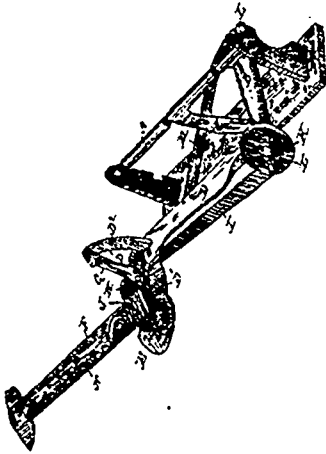
28426 Shapley's Fanning Mill.



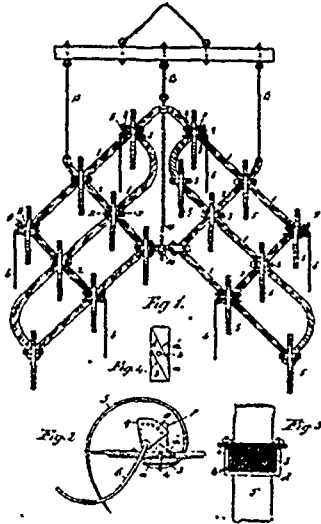
28427 Knupp's Thill Coupling.



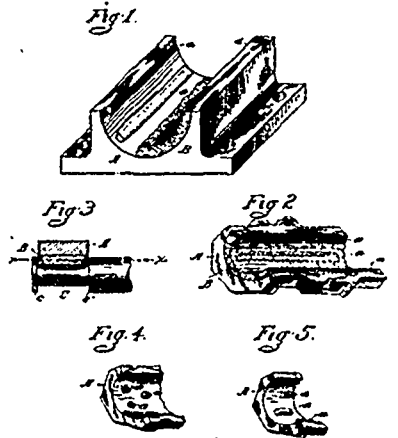
28428 Chase's Elevator for Unloading Vessels.



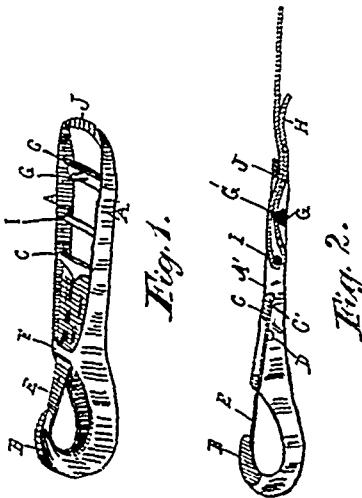
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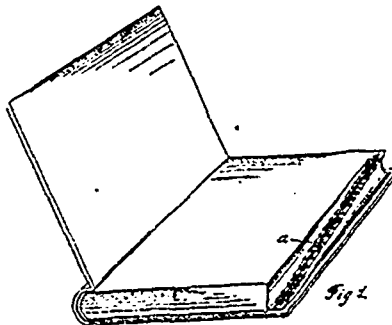
28430 Gillies and Parker's Spring Tooth Harrow.



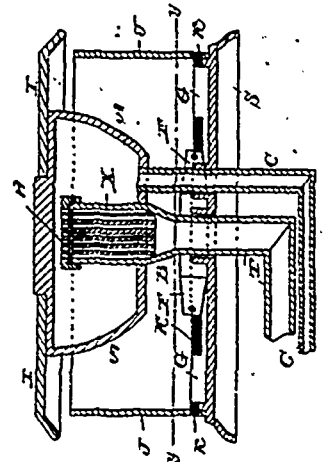
28431 Randolph's Journal Bearing.



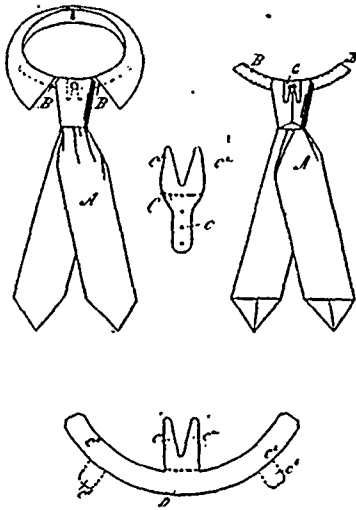
28432 Johnstone's Buckle Strap.



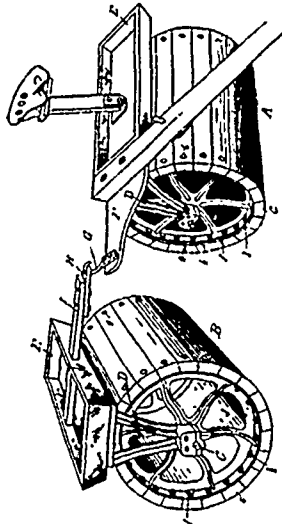
28433 Rea's Letter Book.



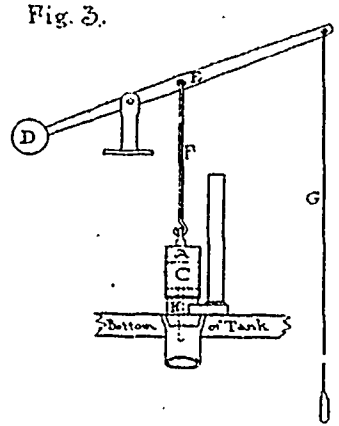
28434 Abbott's Vapour Burner.



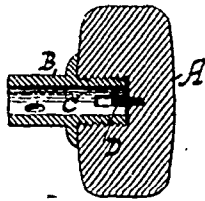
28435 Smith's Necktie.



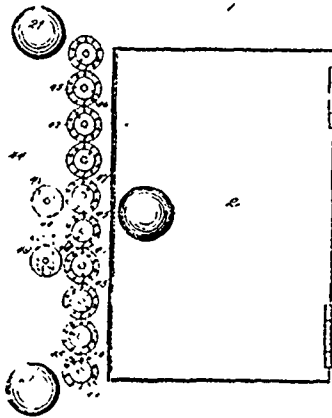
28436 Mallery's Land Roller.



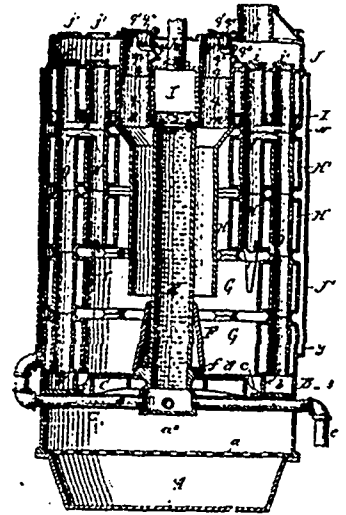
28437 Campbell & McPartland's Flush Valve for Water Closets.



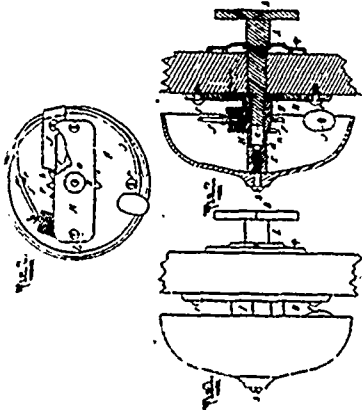
28438 Bardsley's Door Knob.



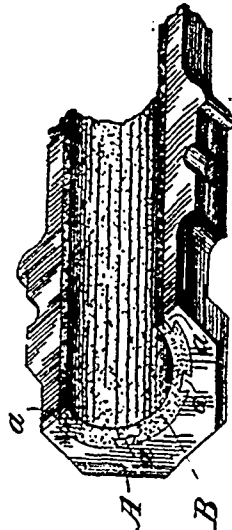
28439 Stanyngought's Safe Lock.



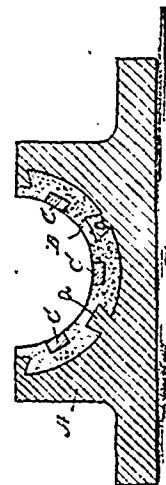
28440 Clinton's Steam Boiler.



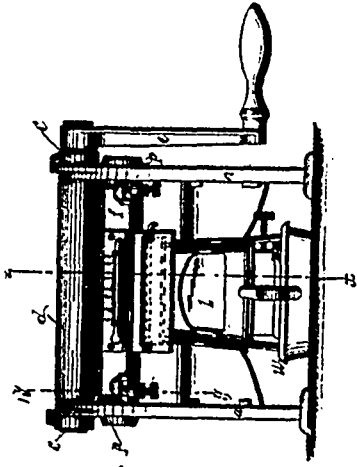
28441 Livingston's Door Bell



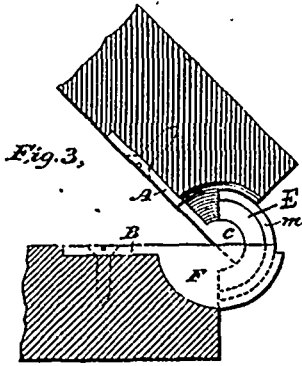
28442 Randolph's Journal Bearing



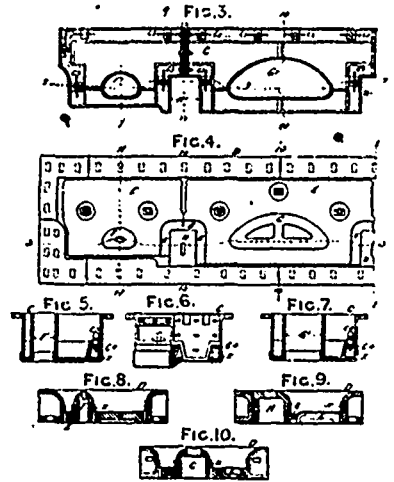
28443 Randolph's Journal Bearing.



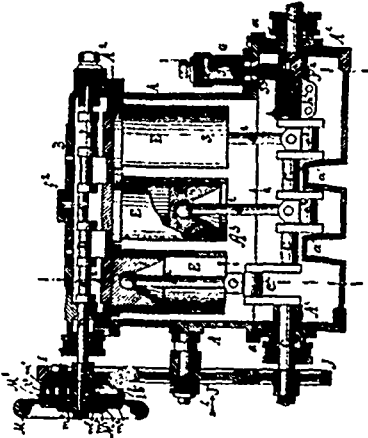
28444 Boles' Photograph Burnisher.



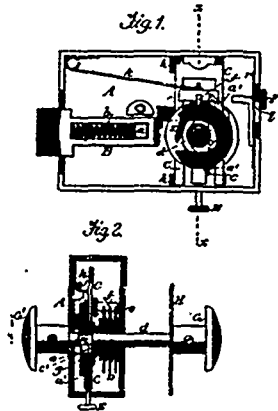
28445 Strachan's Hinge.



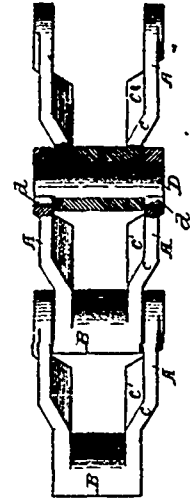
28446 Fox's Machine for Manufacturing Frame Plates for Rolling Stock.



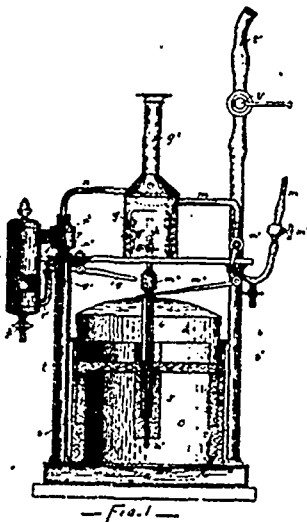
28447 Ofeldt's Gas Engine.



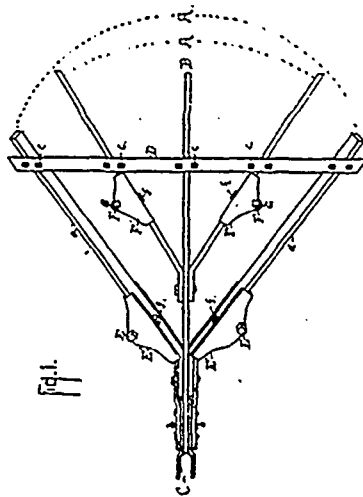
28448 Bolce's Permutation Lock.



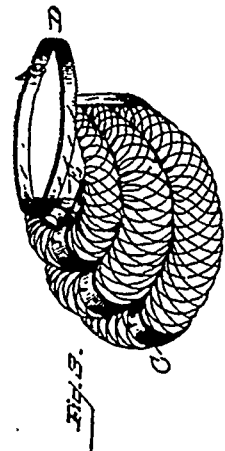
28449 Oborn's Drive Chain.



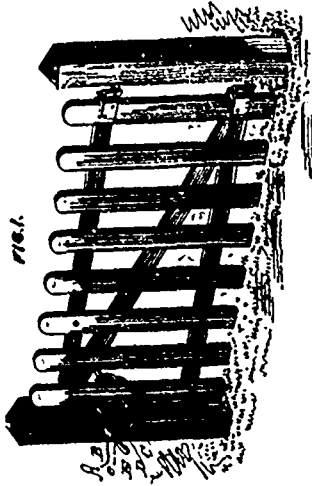
28450 Krieger's Gas Carburettor.



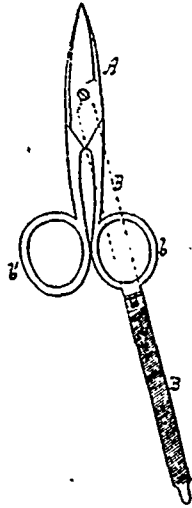
28451 Hayes' Harrow and Cultivator.



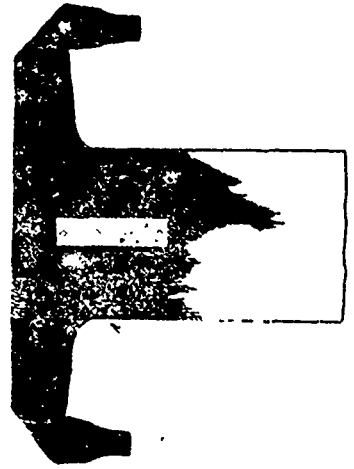
28452 Rosenstock's Bustle, Bustle Skirt, etc.



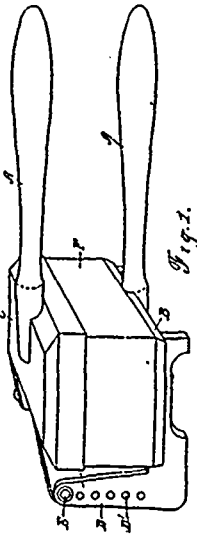
28453 Charloville's Gate Latch.



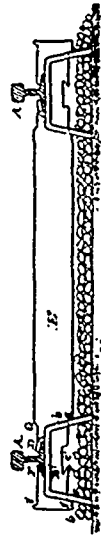
28454 Hawloy's Scissors and File.



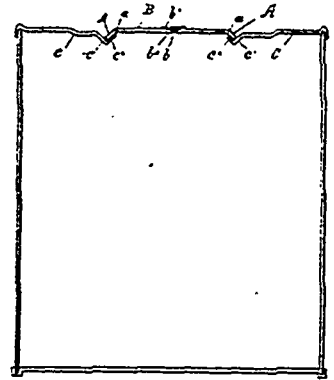
28455 Lewis' Knit Garment.



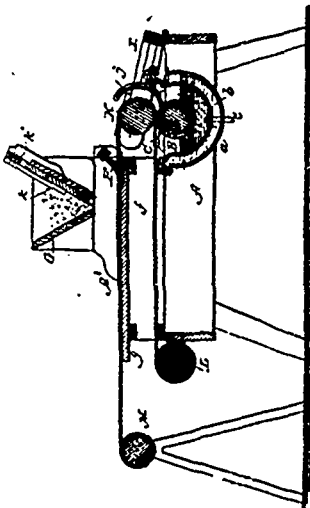
28456 Vrooman's Butter Mould and Press.



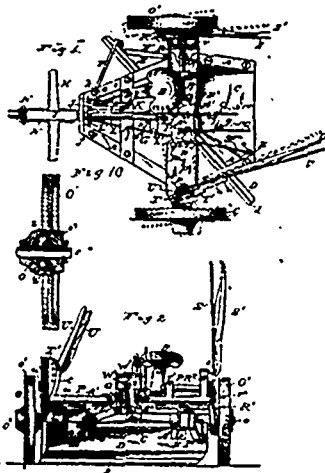
28457 Taylor's Railway.



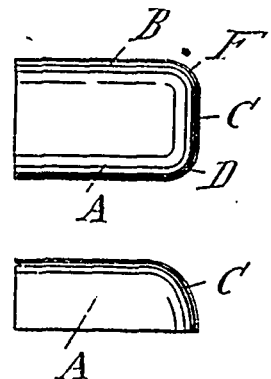
28458 Norton's Sheet Metal Can.



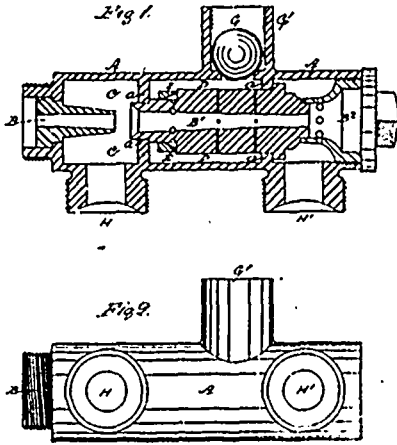
28459 Slusser's Machine for Coating Paper with Sand, etc



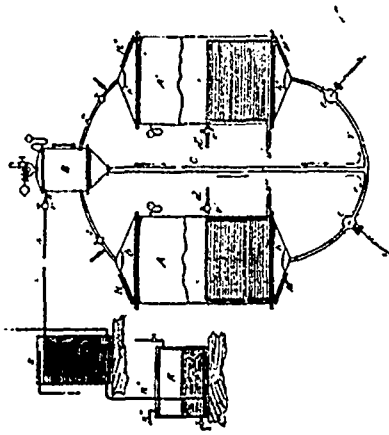
28460 Lomont's Machine for Making Roads



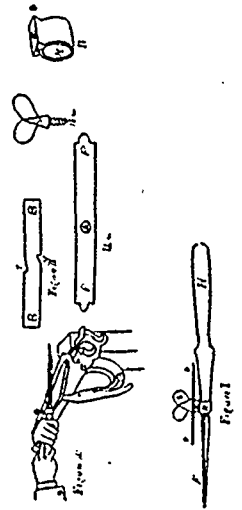
28461 Von Tanko's Piano Key.



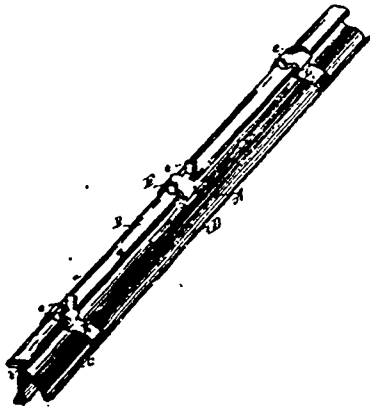
28462 Carroll's Steam Injector.



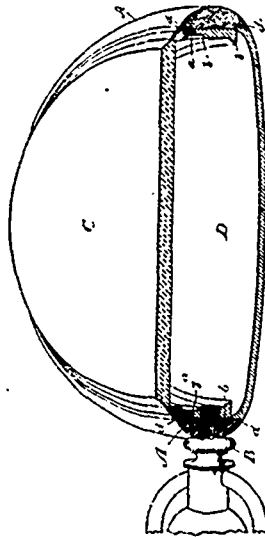
28463 Kellner's Process for Obtaining Cellulose, etc.



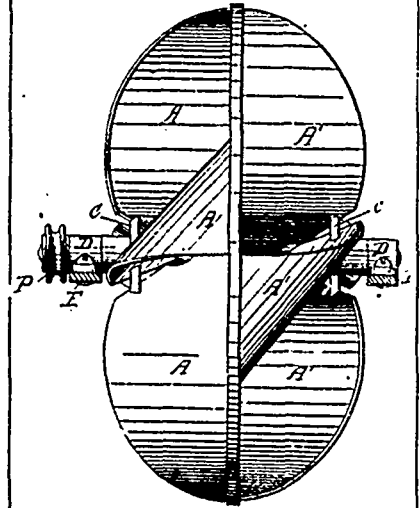
28464 Ruttan's Machine for Sharpening Saws.



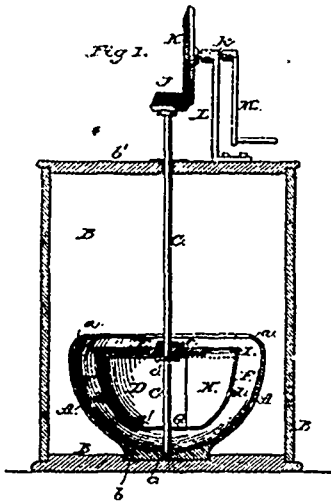
28465 Hall's Railway Tie.



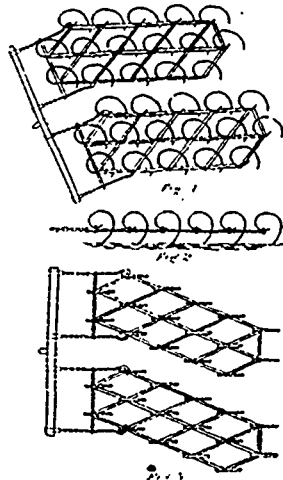
28466 Qutgley's Watch Case.



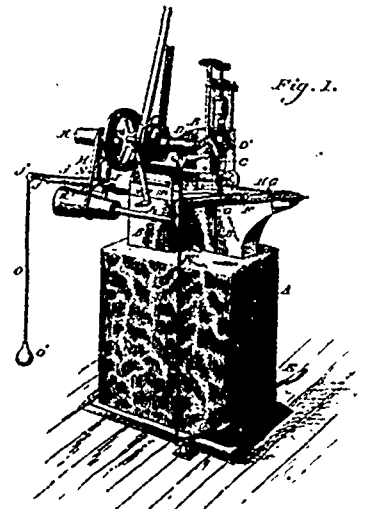
28467 Barney's Ventilator Wheel or Fan.



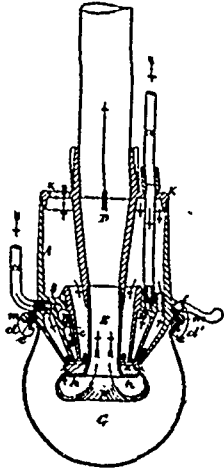
28468 Perkins' Churn.



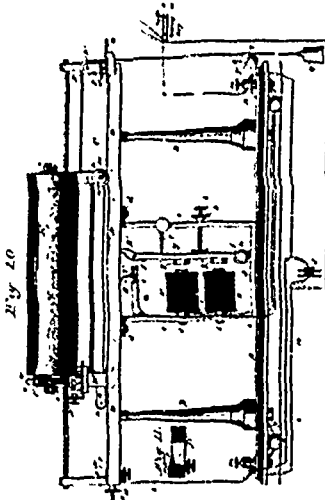
28469 Smith's Harrow.



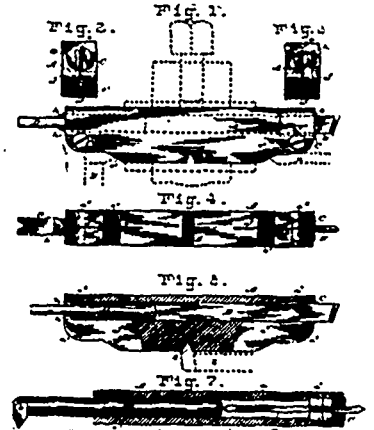
28470 Goaling's Fillo Cutting Mechanism.



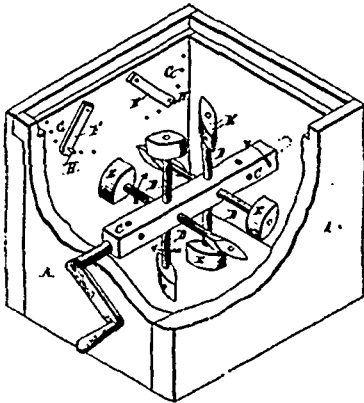
28472 Westphal's Gas Lamp.



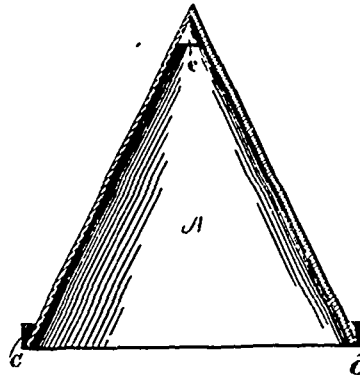
28474 McLaughlin's Mechanism for Type Writers.



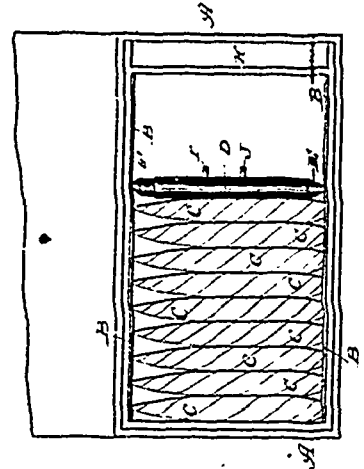
28475 Francis' Tool Holder.



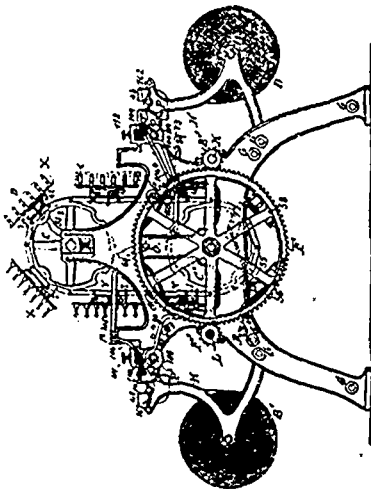
28476 Gibbe's Churn.



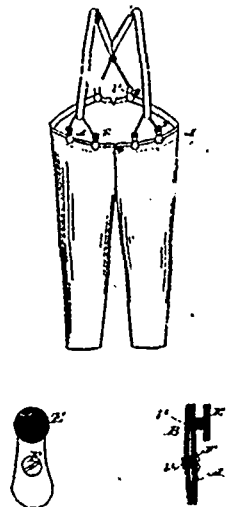
28477 Hallock's Plant Protector.



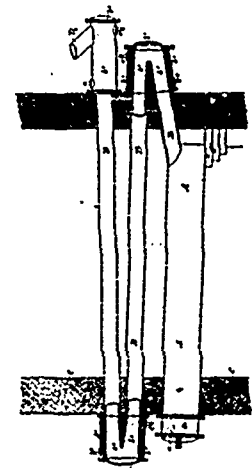
28475 - Vallens' Clear Box.



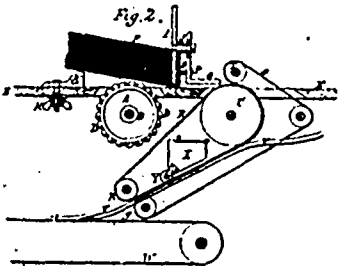
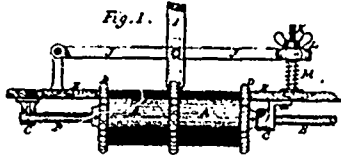
28473 Jaeger's Egg Tray Machine.



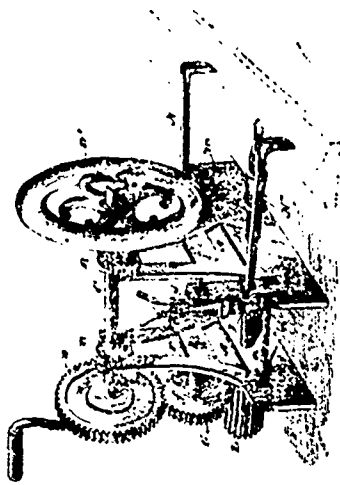
28481 Thorn's Button for Pants.



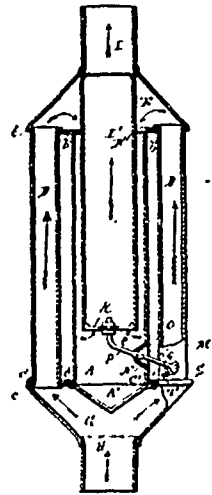
28497 Dinsmore's Apparatus for Manufacturing Illuminating Gas



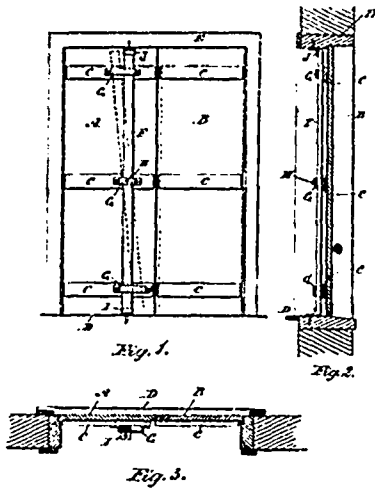
28483 Pollatt's Machine for Spacing Envelopes, etc.



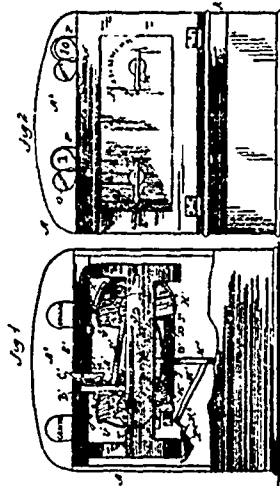
28484 Smith's Rail Drill



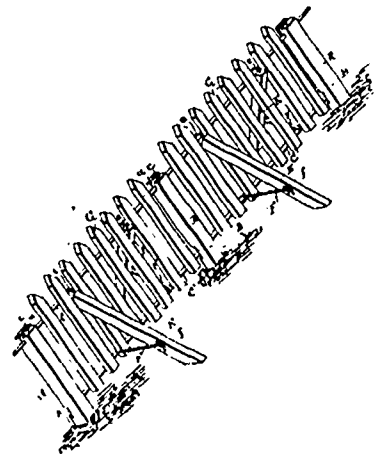
28485 Yates' Heating Drum.



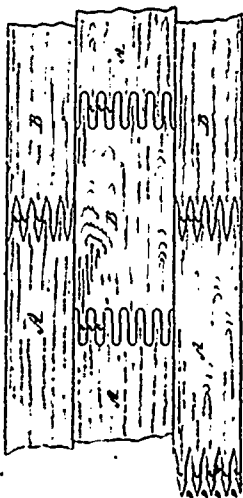
28486 Miller's Barn Door Fastener.



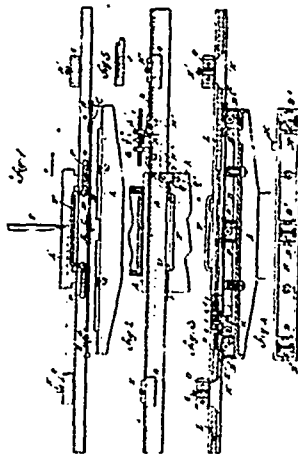
28487 McGill's Cash Register.



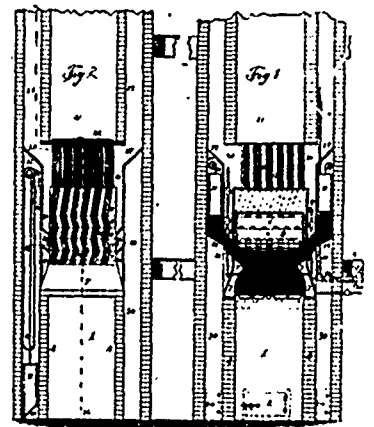
28488 Miller's Fence.



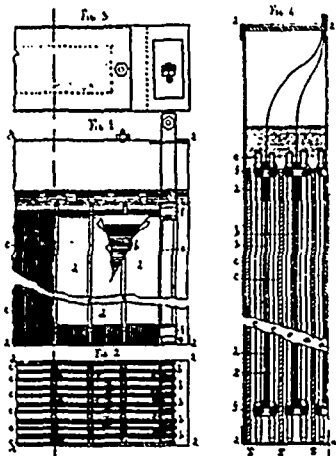
28489 Earing's Method of Splicing Lumber.



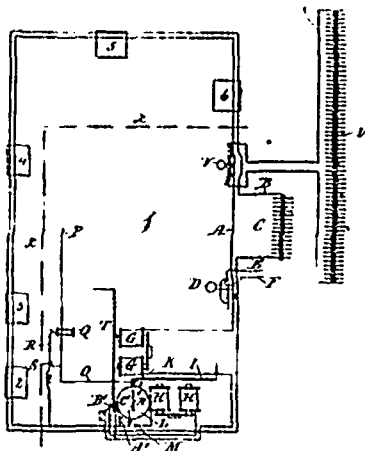
28490 Bullis' Mortising Machine.



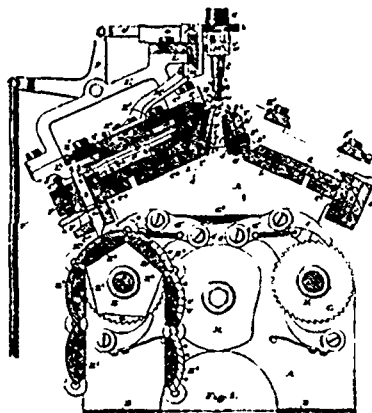
28491 Gleason & Clague's Fire-Place Heater.



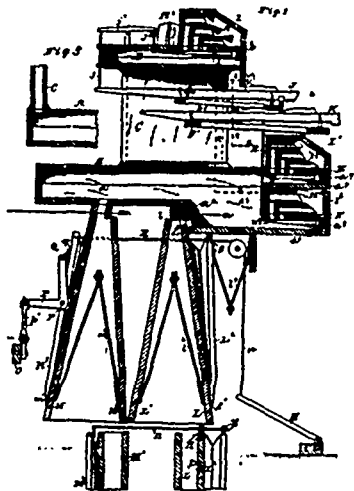
28501 Desmazures' Electric Accumulator.



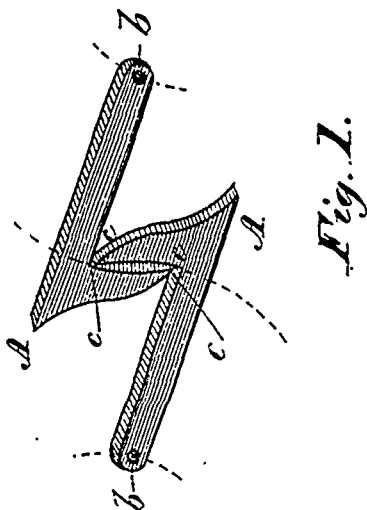
28502 Wood's Electric Circuit.



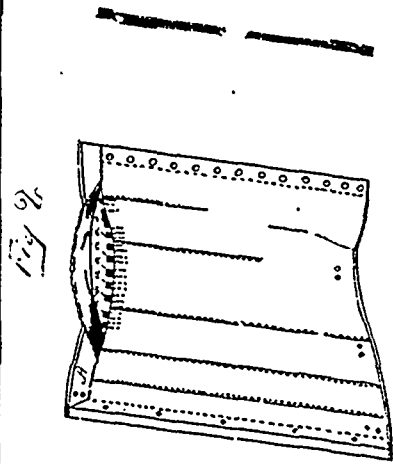
28503 Esty's Knitting Machine.



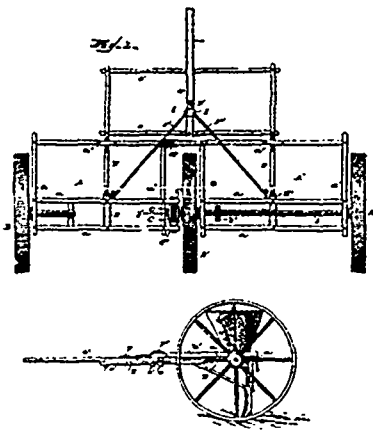
28504 Tralner's Organ.



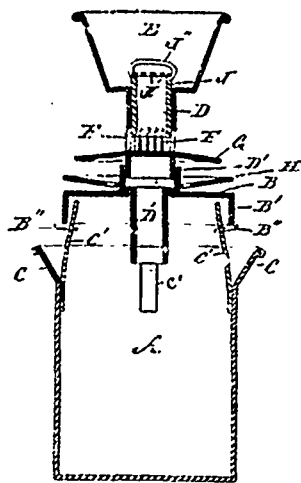
28505 Cushen's Car-Coupling.



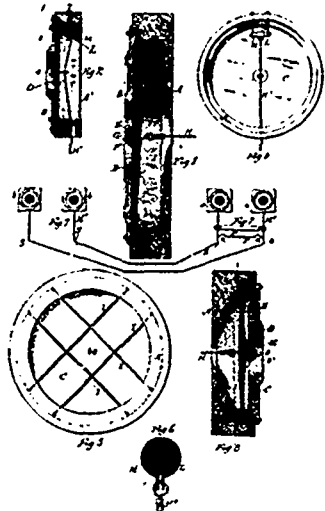
28506 Gilbert's Corset.



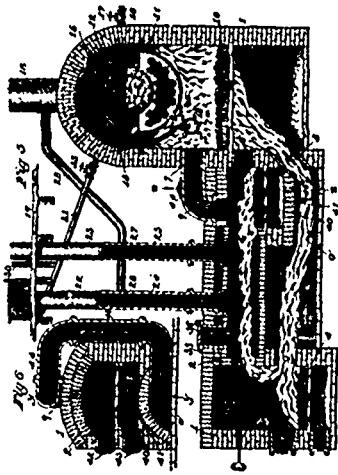
28507 Carson's Seeder.



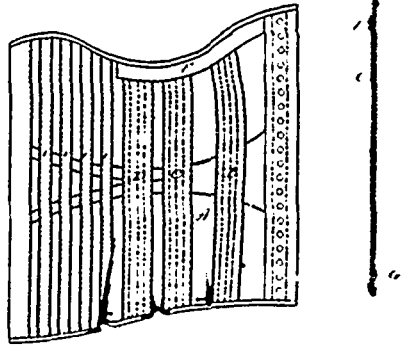
28508 Thomson's Milk Cooler.



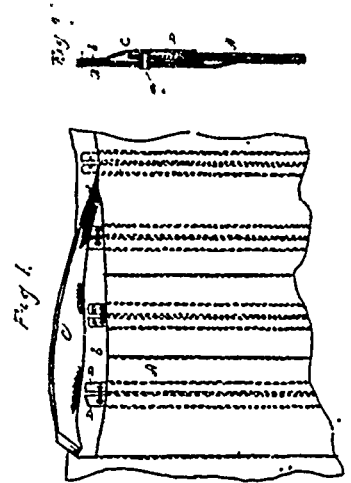
28509 Sunderland's Telephone.



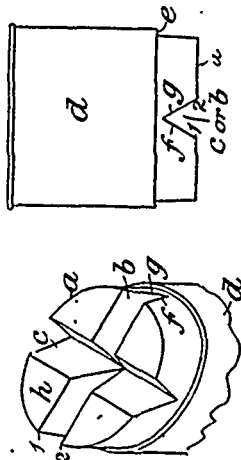
28510 Engle's Furnace.



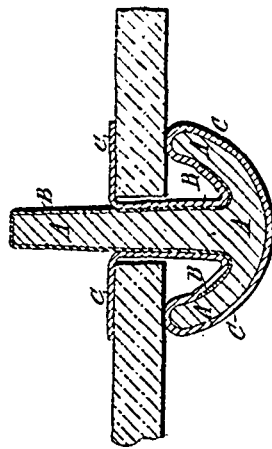
28511 Adler's Corset.



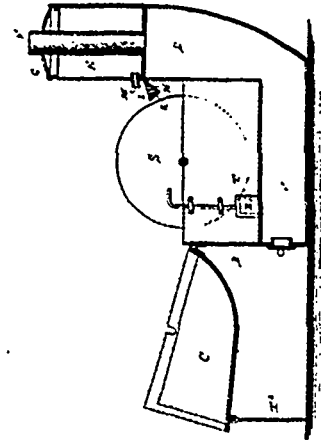
28512 Adler's Corset.



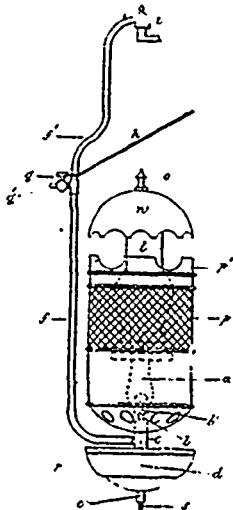
28513 Lane's Heating Vessel.



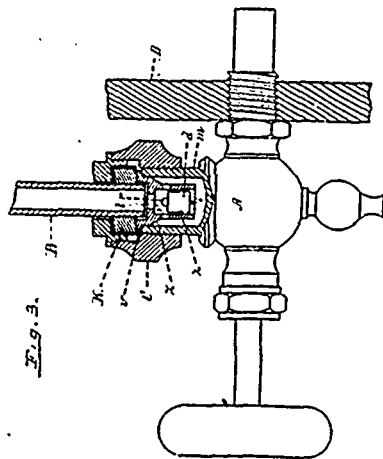
28514 Mackenzie's Means for Glazing Roofs.



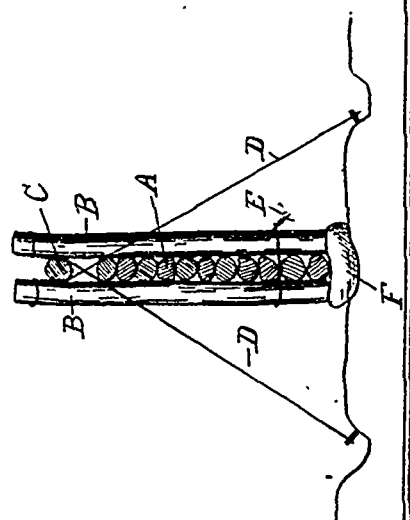
28515 Hastings' Washing Machine.



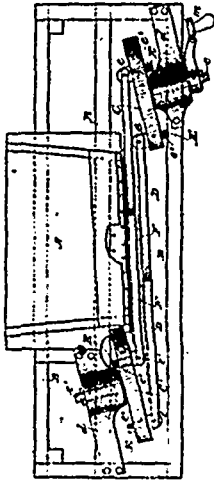
28516 Miller's Gas Heating Apparatus.



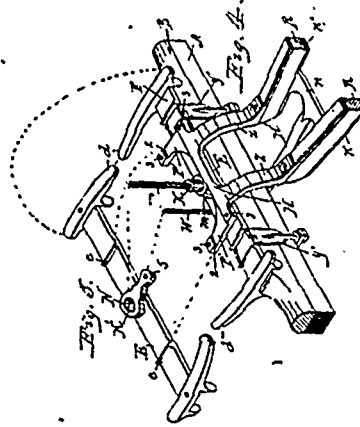
28517 Dunton's Valve.



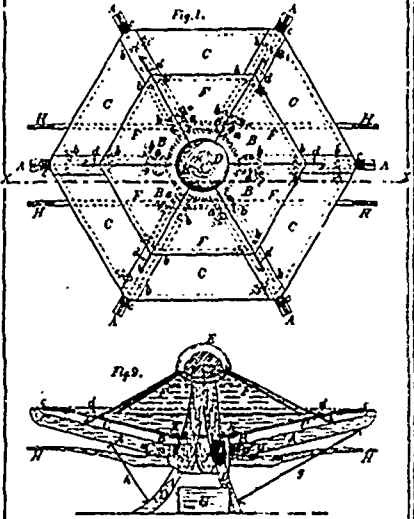
28518 Welds' Fence.



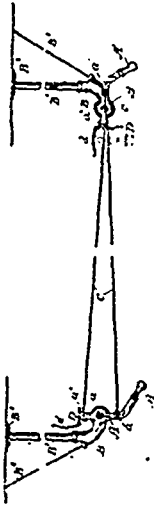
28519 Dick's Straw Cutter.



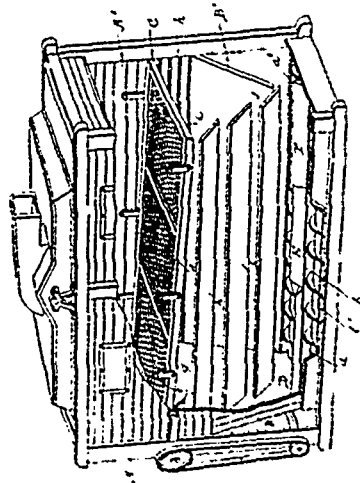
28520 Burdsall's Vehicle Gear.



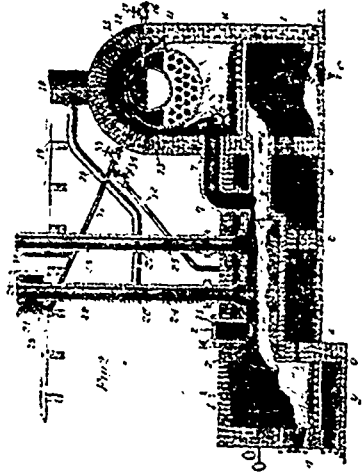
28521 Cook's Fruit Gatherer.



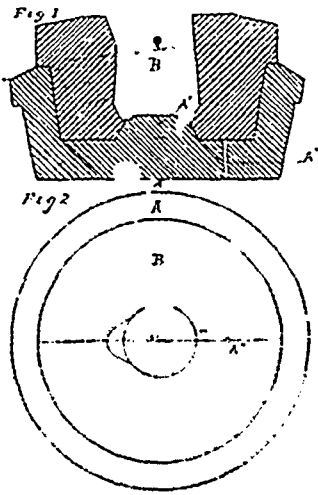
28522 Barr's Cash Carrier.



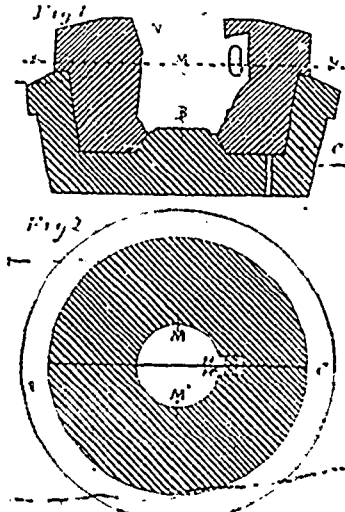
28523 Stone's Middlings Purifier.



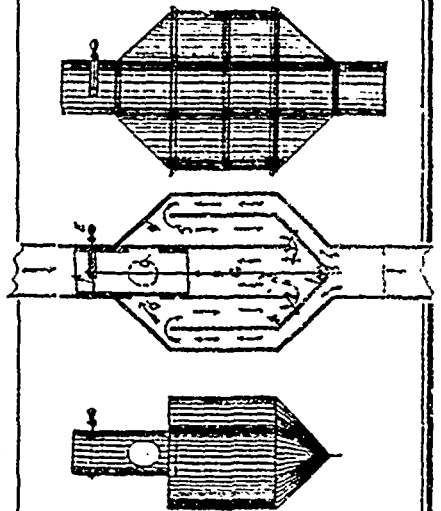
28524 Engle's Process of Burning Wet Substances.



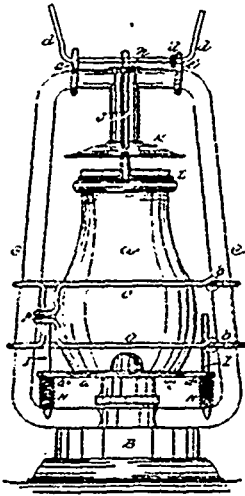
28525 Mayer's Potter's Mould.



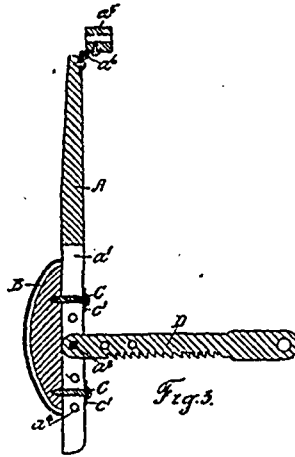
28526 Mayer's Potter's Mould.



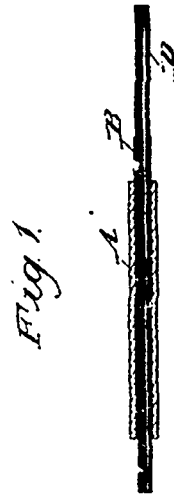
28527 Tracey's Heat Radiator.



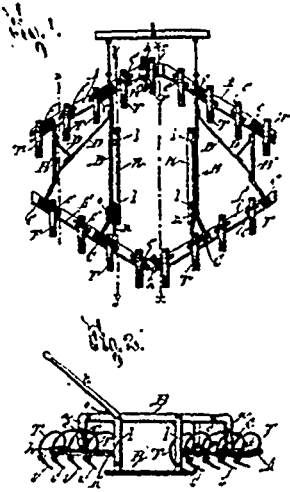
28528 Orr's Lantern.



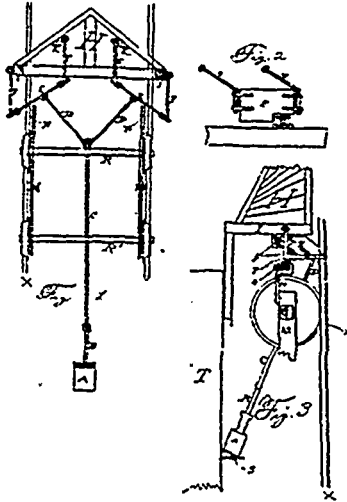
28529 Williams' Tone Regulator for Pianos.



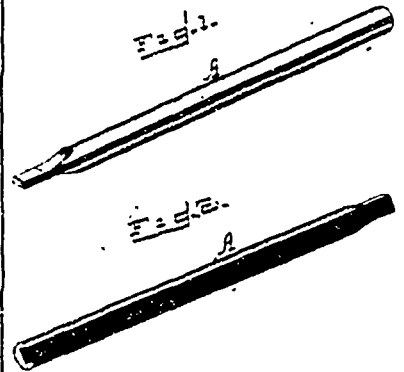
28530 Riedel's Means of Manufacturing Cigarettes.



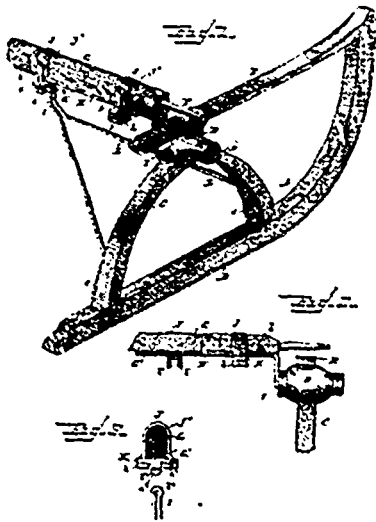
28531 Everingham's Harrow.



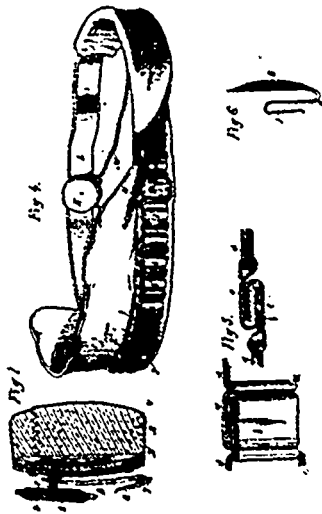
28532 Harris & Bliss' Railway Rail Clearer.



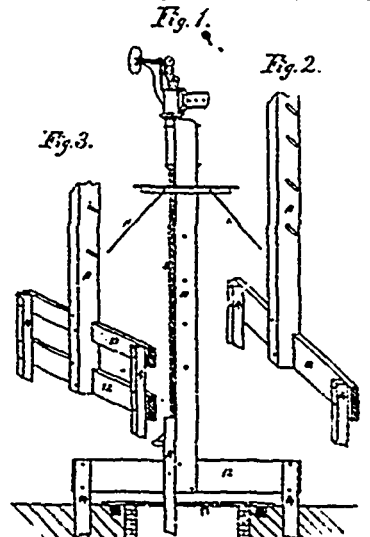
28533 McClelland's Dental Pencil.



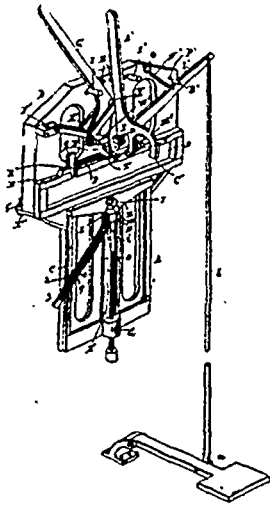
28534 Brownell's Sleigh Runner.



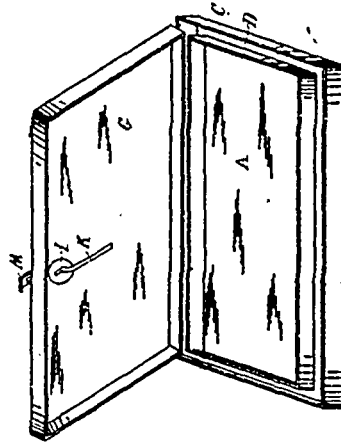
28535 Sherwood's Electric Belt and Truss.



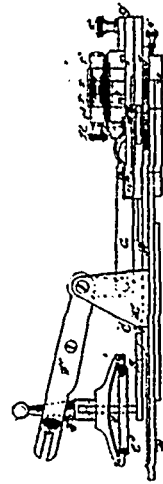
28536 Dunn's Plan of Anchoring Windmill Derricks.



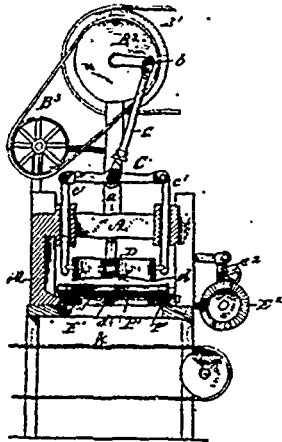
28537 Williams' Saw Swago.



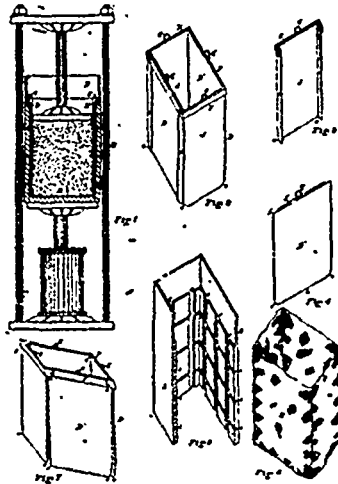
28538 Callard's Blotter Case for Copying Press.



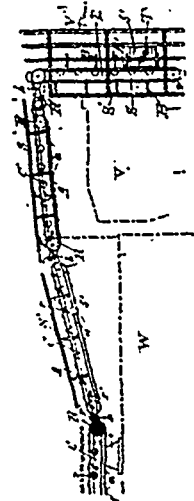
28539 Williams' Button-Hole Attachment.



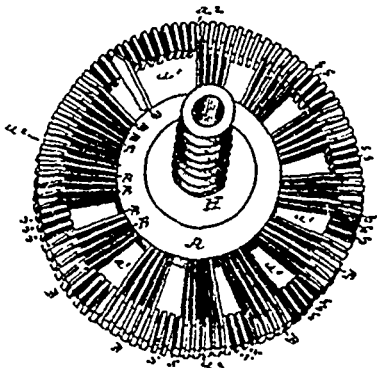
28540 Parker & Gunning's Apparatus for Cutting and bevelling Elastic Materials.



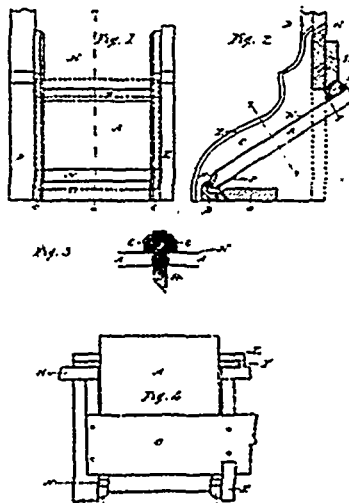
28541 Mitchell's Machine for Baling Saw Dust, etc.



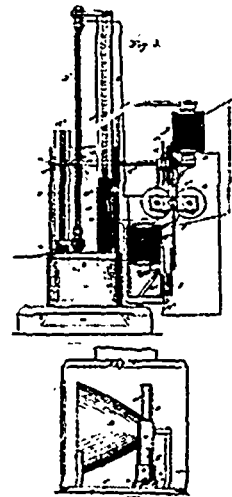
28542 Russell's Freight Elevating and Transporting Apparatus.



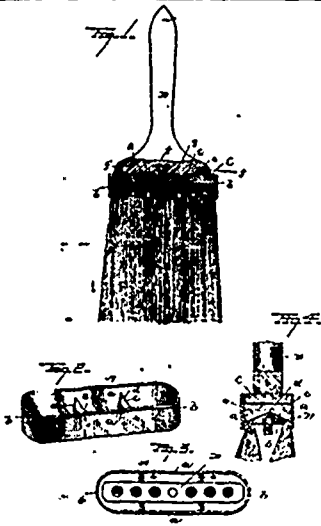
28543 Kinsey's Presser Wheel for Kolling Machines.



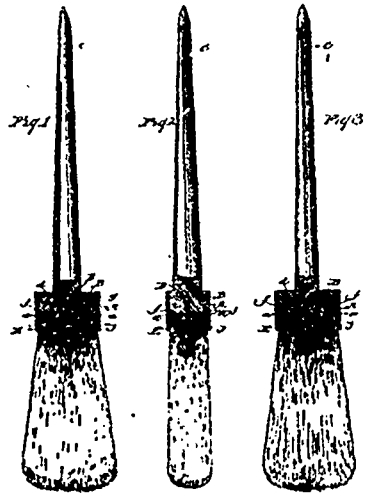
28544 Doherty's Pedal Attachment for Organ Cases.



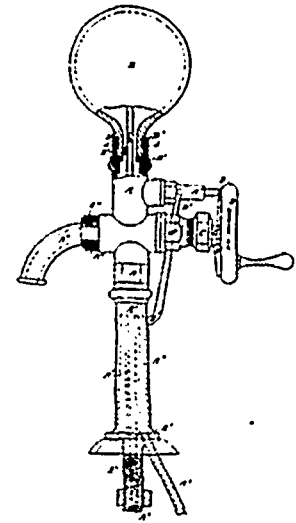
28545 Fylo's Electric Arc Lamp for Locomotives.



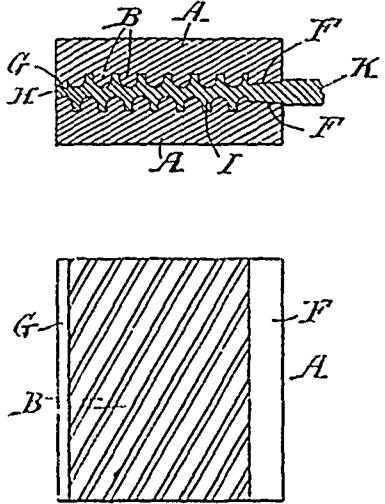
28546 Fish's Brush.



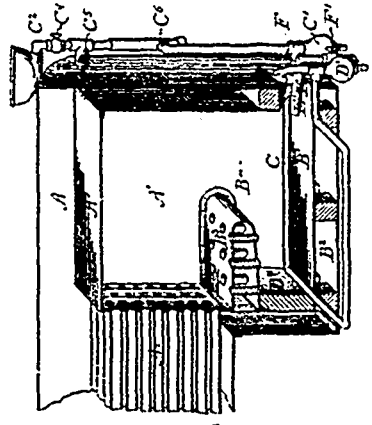
28547 Fish's Brush.



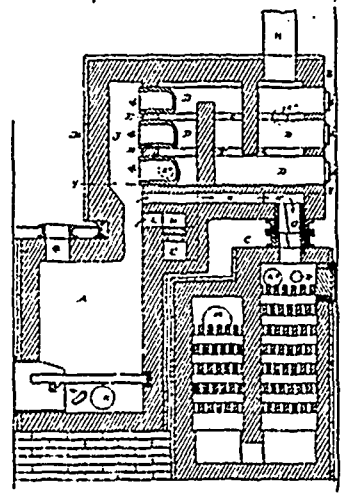
28548 Ferguson's Apparatus for Drawing Aërated Liquid from Reservoirs



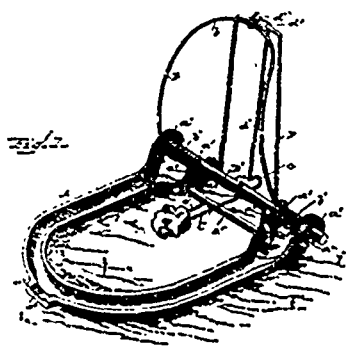
28549 Landry's Mechanism for Manufacturing Augers.



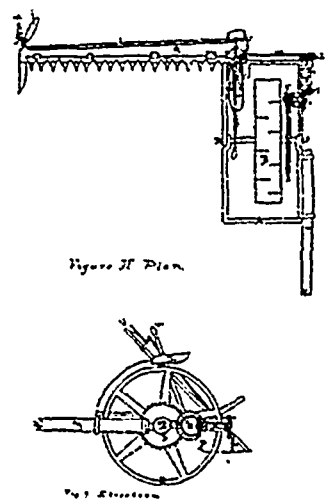
28550 Burgess' Hydrocarbon burning Apparatus



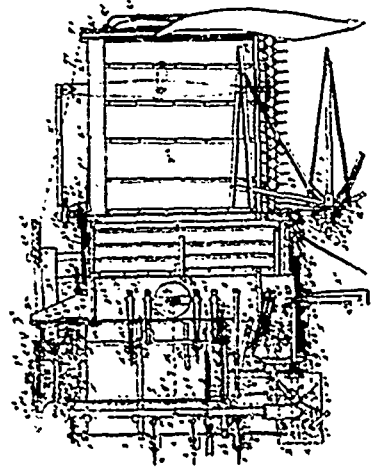
28551 Humphrey's Gas Apparatus.



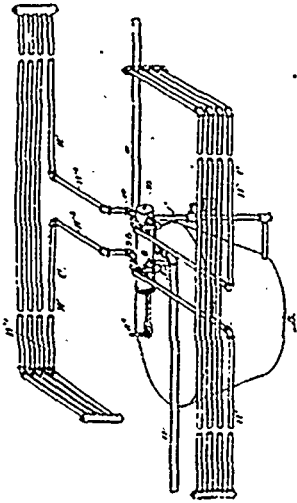
Becker's Animal Trap.



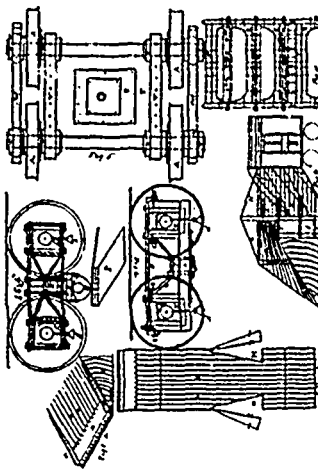
28553 Fox's Mowing Machine.



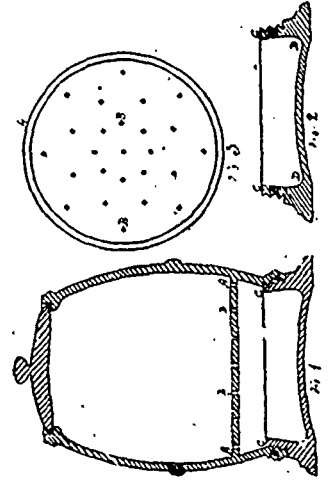
28554 Hale's Harvester.



28555 Sewall's Car Heating Apparatus.



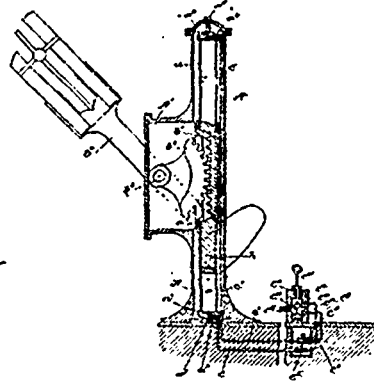
28556 Russell's Railway Wing Snow Plough.



28557 Ruthven's Appliance for Keeping Tobacco.



28558 Hawley's Portable Cleat.



28559 Hall's Railway Gate.

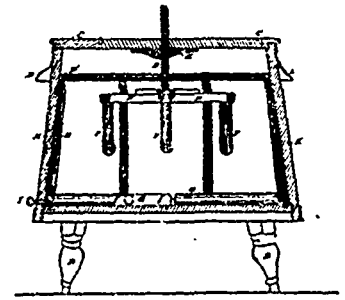
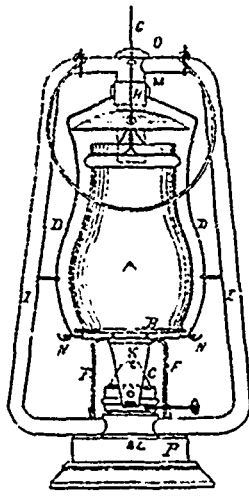


Fig 1



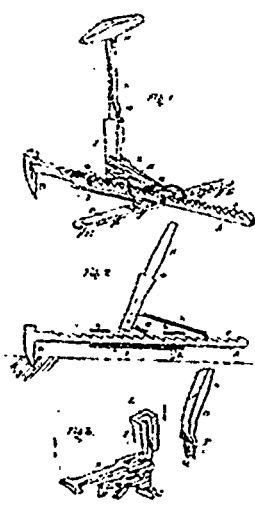
Fig 2

28560 Clarke's Washing Machine.

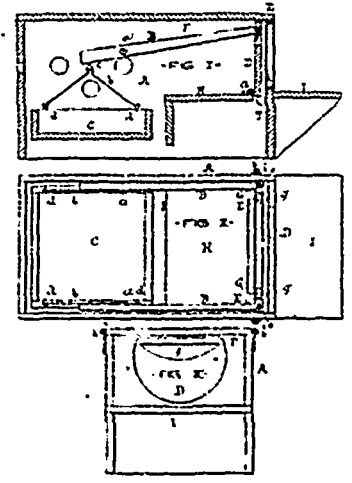


Figs 1 & 2

28561 Grey & Chappell's Lantern



28562 Meyers' Carpet Stretcher.



28563 Russell's Hon's Nest.