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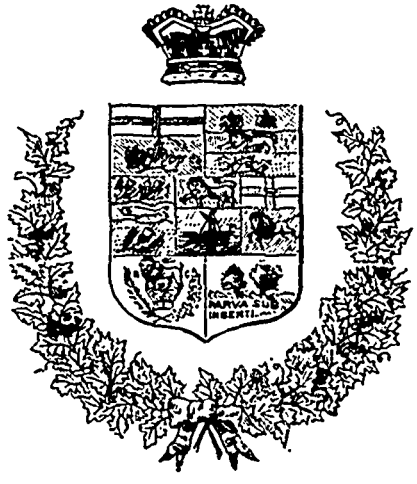

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Brick machine. D. Woodbury 24978

ERRATA

Interlocking apparatus for railway points and signal levers. H. Reid 29,638

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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. 28,127. Steam Engine Valve.

(*Soupape de vapeur.*)

Andrew J. Peirce Madison, Wis., and Edward F. DeForest, Elgin, Ill., U.S., 2nd December, 1887; 5 years.

Claim.—1st. The combination, with a steam chest, a cylinder provided with suitable ports leading from the chest, and an exhaust valve, of a bifurcated rocker carrying valves for the cylinder ports, and having friction rollers journalled to its head, and a valve stem having a portion thereof in the form of a hollow box, the sides of which are provided with cam-slots to engage the friction rollers, and means for actuating said stem, substantially as and for the purpose set forth. 2nd. The combination, with a steam-chest, a cylinder provided with ports leading from the chest, and an exhaust valve, of a bifurcated rocker carrying valves for the cylinder ports, an axle adjustably secured in the rocker-head, friction rollers journalled on the extremities of said axle, a valve stem having a portion thereof in the form of a hollow box, the sides of which are provided with cam-slots to engage said rollers, and means for actuating the valve-stem, substantially as and for the purpose set forth. 3rd. The combination, with a steam-chest, a cylinder provided with ports leading from the chest, and an exhaust valve, of a bifurcated rocker carrying valves for the cylinder ports, an axle having a square central portion fitted in the rocker head, friction rollers journalled on the extremities of said axle, a valve stem having a portion thereof in the form of a hollow box, the sides of which are provided with cam-slots that engage the friction rollers, and means for actuating said stem, substantially as and for the purpose set forth. 4th. The combination, with a steam-chest, a cylinder provided with ports leading from the chest and an exhaust valve, of a bifurcated rocker carrying valves for the cylinder ports, and having friction rollers journalled to its head, a valve stem that has a portion thereof in the form of a hollow box, the sides of which are provided with cam-slots to engage the friction rollers, these slots having approximately level faces for a certain distance each side their vertical centre, and means for actuating said stem, substantially as and for the purpose set forth. 5th. The combination, with a steam-chest, of a cylinder having a transverse bore in its bridge, and ports leading from said chest, a bifurcated rocker carrying valves for the cylinder ports, a valve stem operatively connected to the rocker-head, an exhaust valve loosely fitted in the bridge bore and provided with apertures that are arranged to come in and out of register with said ports, and means for simultaneously actuating the valve stem and exhaust valve, substantially as and for the purpose set forth. 6th. The combination, with a steam-chest, a cylinder provided with ports leading from the chest, a suitable valve for the cylinder ports and an exhaust valve, of a crank-arm having a ball and socket joint at one extremity with the valve stem, and pivotally connected at its other extremity with said exhaust valve, substantially as and for the purpose set forth. 7th. The combination, with a steam-chest, a cylinder provided with ports leading from the chest, a suitable valve for the cylinder ports having one end of its stem provided with a box, an exhaust valve operatively connected with a pitman, a crank-arm having one extremity thereof provided with a recess, and its other extremity pivoted to said pitman, and a pintle loosely fitted in said recessed extremity of the crank-arm, and having a round head socketed in the box at the end of the valve stem, substantially as and for the purpose set forth.

No. 28,128. Tubular Lantern.

(*Lanterne tubulaire.*)

Charles A. Kennedy, (assignee of George A. Kennedy,) Coaticook, Que., 2nd December, 1887; 5 years.

Claim.—1st. In a tubular lantern, the combination of the tubes C having sockets c, chamber D, tube D_1, cover F, wire F_1, clasp F_2, globe G, wires H having strips h, and plate E, substantially as set forth. 2nd. In a tubular lantern, the combination of the cover F, globe G, wires H, provided with guides at their lower end and plate E, substantially as set forth. 3rd. In a tubular lantern, the combination of the chamber D, tube D_1, cover F, wire F_1 and wires H, substantially as set forth.

No. 28,129. Metallic Circular Lath to be used as Grounds for Plastering on in Forming Rounded Corners to Stud Partitions, etc.

(*Latte métallique circulaire pour servir de lattis pour crépir en faisant des angles à façons rondes aux cloisons à poteaux, etc.*)

John Radigan, Hamilton, Ont., 2nd December, 1887; 5 years..

Claim.—The circular metallic laths A and B to be used as grounds for plastering on, to form rounded corners on the partitions in buildings, also for grounds around circular colums for plastering on, substantially as herein set forth.

No. 28,130. Connecting Rod for Engines or Machines. (*Bielle de raccordement pour machines.*)

Francis E. Wyer, Montreal, Que., 2nd December, 1887; 5 years.

Claim.—The combination of bars A, A, centre stay C and stay collars D, D, D, D, with brasses B, B, B, B and nut cheek E, E, substantially as and for the purposes hereunto set forth.

No. 28,131. Machinery for Drawing and Spinning Hemp, etc. (*Machine à étirer et filer le chanvre, etc.*)

John Good, Brooklyn, N.Y., U.S., 3rd December, 1887; 5 years.

Claim.—1st. The combination, with a catenary series of bars armed with gill-pins, and a flier and a spindle contained therein, of a plurality of conductors arranged between said bars and the flier, substantially as herein described, for the purpose of receiving from said pins a plurality of slivers to be simultaneously twisted, each separately and all together by the rotation of the flier, as herein set forth. 2nd. The combination, with a catenary series of bars armed with gill-pins, and a flier and spindle contained therein, of a plurality of conductors and a forming-tube interposed between said bars and the flier, substantially as and for the purpose herein set forth. 3rd. The combination, with a plurality of fliers and a catenary series of gill-pin bars, for drawing slivers to be spun by the several fliers, and a stand, as A, for supporting the entire series of gill-pin bars, of a number of forming-tubes, one for each flier, a plurality of sliver, conductors for each flier and forming-tube, and a number of independent standards, as I, erected in said stand, and each supporting the forming-tube and the plurality of conductors for each flier, substantially as herein described. 4th. The combination, with the plurality of slivers, conductors arranged side by side and the forming-tube common to all, the said conductors of bonnets applied over the faces of certain of the conductors, substantially as and for the purpose herein described. 5th. The combination, with a flanged sliver-conductor, of a bonnet consisting of a bent elastic plate S having a channel o and hooked over the flange of the conductor, substantially as herein set forth. 6th. The combination, substantially as herein described, with the several horizontal fliers and their spindles, the friction disks fast on said spindles, and the driving pulleys loose on the same, of the upright shafts P, P, provided with arms r, yokes r^2 and arms r^4, the rock-shafts s having arms s^1, s^2, connected with said arms r^4 and also having an arm s^3, the gear Q, the spring 44 connect-

ing said gear and said arm e3, and mechanism, substantially as described, for transmitting motion to the said gear, for the purpose herein set forth.

No. 28,132. Balance Wheel for Pumps.

(Roue à manivelle pour pompes)

David Stoner, White Pigeon, Mich., U. S., 3rd December, 1887; 5 years.

Claim.—The combination, with a balance wheel on a crank shaft, of a weight receiving box F provided with a crank handle c on one side and on the opposite side, a device for fastening the box and handle to the said wheel, substantially as specified.

No. 28,133. Apparatus for Manufacturing Soap. *(Appareil de fabrication du savon)*

Alfred H. Pritchard, Bradford Ont., 3rd December, 1887; 5 years.

Claim.—1st A hermetically-sealed compartment, partially or wholly encased within a heating chamber, designed so receive the tallow and alkaline solutions, and having a series of heating tubes arranged within its interior, so that the heat shall be applied to the mixture at various points in order to produce an agitation, and also convey heat to all parts of the mixture, substantially as and for the purpose specified. 2nd. A boiler or hermetically-sealed compartment E suspended within an outer shell F, and having a tube J extending through it, with tubes K radiating therefrom, in combination with the steam pipe H, substantially as and for the purpose specified. 3rd. A boiler or hermetically-sealed compartment E, suspended within an outer shell F and having a tube J extending through it, with tubes K radiating therefrom, in combination with the steam pipe H and discharge pipe M, substantially as and for the purpose specified 4th. A boiler or hermetically-sealed compartment E, suspended within an outer shell F and having a tube J extending through it, with tubes K, radiating therefrom and supplied with steam from the pipe H, in combination with the discharge pipe M having a suitable valve and provided with a steam pipe O, substantially as and for the purpose specified. 5th. A boiler or hermetically-sealed compartment E, suspended within an outer shell F and having a tube J extending through it, with tubes K, radiating therefrom and supplied with steam from the pipe H, in combination with the pipe L, substantially as and for the purpose specified. 6th. A boiler or hermetically-sealed compartment E, suspended within an outer shell F and having tube J extending through it, with tubes K, radiating therefrom and supplied with steam from the pipe H, and having a testing pipe P, substantially as and for the purpose specified.

No. 28,134. Amalgamator and Concentrator. *(Moulin à amalgamer et concentrer)*

Franklin L. Downend, Denver, Col., and John O. Hibbard, Cincinnati, Ohio, U.S., 3rd December, 1887; 5 years.

Claim—1st. In a gold amalgamator and concentrator, the false bottom N1 of chilled iron, formed in sections so as to facilitate removal, and provided with grooves L for holding mercury and to keep it from flowing. 2nd. In a gold amalgamator and concentrator, the cast iron core A1 fastened to the bottom, to keep the material from running into the centre and to prevent their thus getting out of the track of the mullers R, and also to guide and steady the inner muller R. 3rd. In a gold amalgamator and concentrator, the combination of the cone A1 with the muller R, whereby the mullers are steadied and the materials kept in the track to be operated on by them. 4th. The arrangement of the mullers on the two arms, whereby those on one arm follow in the tracks of the intervals of the others, so that the whole surface is acted upon at every revolution of the central shaft, as shown and described. 5th. The frame F provided with the diagonal cross braces N, made as described and adapted to be removed, as shown and described.

No. 28,135. Check Book. *(Livret de contrôle.)*

James L. O'Connor, New York, N. Y., U. S., 3rd December, 1887; 5 years.

Claim.—1st. In a check book, the combination, with a stiff back composed of two covers joined together, one for each side of the book, and one of said covers comprising a silica tablet, of a sheet of paper within said covers, ruled, numbered, printed and arranged for summaries of sales, a carbon sheet and a manifold composed of detachable sheets of paper and, together with said carbon sheet, fastened to said back, all substantially as and for the purpose set forth. 2nd. In a check book, the combination, with a back composed of two stiff covers joined together, one for each side of the book, and one of said covers comprising a silica tablet, a sheet of paper within said back printed ruled and numbered for summaries of sales, of a manifold consisting of detachable sheets of paper fastened by one end to one end of said covers, and reaching beyond the other end of said cover, a carbon sheet lying upon said manifold, and an automatic spring clip, substantially as specified, detachably securing said manifold and said carbon sheet to the said back, all substantially as and for the purpose set forth.

No. 28,136. Manifold Copying Book.

(Livre à copies multiples)

James L. O'Connor, New York, N.Y., U. S, 3rd December, 1887; 5 years.

Claim.—1st. The combination, with a folding cover and with one or more carbon sheets attached to the upper edge of the left hand leaf of the cover, of a record book secured to the cover along a central line between its right and left hand leaves to lie upon the one and fold over upon the other, and a series of detachable leaves of paper attached to one edge of the left hand cover, to interfold with the carbon sheets and the leaves of the record book, whereby a duplicate copy of the matter written in manifold upon the detachable leaves shall be simultaneously obtained upon the pages of the record book, substantially in the manner and for the purpose set forth. 2nd. The combination of a folding cover, a record book attached to the central hinge or fold of the cover, to admit of lying upon the one leaf of the other of said cover, a clip hinged to one edge of the left hand leaf of the cover, and a series of detachable leaves confined by said clip, all substantially in the manner and for the purpose set forth. 3rd. The combination of a stiff folding cover, a series of detachable leaves attached to one edge of the left-hand leaf of the cover, one or more carbon sheets attached to the top edge of said left hand leaf, a record book made to fit within said cover, and a confining wire secured to the top and bottom edges of the right hand leaf of the cover to extend along its medium fold, and which is passed within the middle fold of the book to attach it thereby to the cover, substantially in the manner and for the purpose herein set forth. 4th. The combination with a folding cover, a record book attached to the hinge or fold of the cover to lie upon either leaf thereof one or more carbon sheets attached to the upper edge of the left hand leaf of the cover to fold down over the same, and a series of detachable leaves attached to a second edge of said left-hand leaf to fold over thereon, and interfold with the carbon sheets and the leaves of the record book of an auxiliary cover hinged to the edge of the left-hand leaf of the main cover, to which the detachable leaves are secured to protect the same, substantially in the manner and for the purpose set forth. 5th. The combination, with a folding cover and with a record book, independent leaves and carbon sheets fitted within said cover, of a supporting plate hinged to the upper edge of the left-hand leaf of the cover, and under which the leaves of the record book may be inserted after having been written upon, substantially in the manner and for the purpose set forth.

No. 28,137. Improvements in Sealing Envelopes, Packages, etc. *(Perfectionnements dans la mode de cacheter les enveloppes, les paquets, etc.)*

Samuel T. Brooks, San Francisco, Cal., U. S., 7th December, 1887; 5 years.

Claim.—1st. The improvement in the sealing of envelopes, packages and other inclosing cases, consisting of a plate provided with inclined prongs or projections scattered over its surface upon one side only, said prongs adapted to pass through the material composing the envelope, etc., at the point where the wax seal is to be placed, whereby said wax or seal is held by contact with the prongs of the plate, substantially as hereinbefore set forth. 2nd. In combination with an envelope, package or other inclosing casing, a metal plate arranged within said envelope, package or other casing, and plate provided with inclined projections scattered over its surface on one side only, which projections pass outwardly through the material of the envelope in position to receive and secure the wax seal, substantially as hereinbefore set forth.

No. 28,138. Process for Cleaning Beer Yeast. *(Procédé pour nettoyer la levure de bière.)*

Baron Jules de Ropp, Bavern, Russia, 7th December, 1887; 5 years.

Claim—The process of cleaning beer yeast, which consists in passing the same through a body of horse or other hair, wool, silk, cotton, hemp, linen, or other vegetable fibres or fabrics, or material made therefrom, in conjunction with one or a series of sieves, all substantially as described.

No. 28,139. Process of Converting a Photographic Image on a Gelatine Surface into a Relief or Intaglio Printing Surface. *(Procédé pour changer une image photographique à surface de gelatine en surface d impression en relief ou en creux.)*

Henry Sutton, Ballarat, Victoria, 7th December, 1887; 5 years.

Claim.—In the process of converting a photographic image on a gelatine surface into a relief or intaglio printing surface, the application of heat to such gelatine surface after it has been immersed in water, in the manner and for the purpose substantially as herein described and explained.

No. 28,140. Sash Lock. *(Arrête-croisée.)*

John S. Lister, Cleveland, Ohio, U.S., 7th December, 1887; 5 years.

Claim—1st. In a sash lock, a locking plate having an eccentric cam-shaped rib arranged along a portion of its edge and cut away on one side, substantially as shown, an inclosing case correspondingly cut away on one side, and a spindle and handle for rotating the locking plate, in combination with a locking piece having a straight front edge, and a curved groove and lip within said edge, whereby when the parts are brought into engagement, the sashes are locked, substantially as set forth. 2nd. In a sash lock, an inclosing case, a locking plate having an eccentric cam-shaped rib along a portion of its edge, and a handle on the spindle with a latch to hold it when the lock is closed, in combination with a locking piece for the upper sash, substantially as set forth.

No. 28,141. Device for Operating Throttle Valves and Reversing Gear for Locomotives and Engines. *(Appareil pour actionner les soupapes d'admission et les leviers de changement de marche pour locomotives et machines.)*

Robert C. McArthur, Hamilton, Ont., 7th December, 1887; 5 years.

Claim.—1st. The combination, with a valve rod, of a lever pivotally connected with said valve rod, a segment extending across and guided on said lever, and cams or clutches pivoted on said lever and held in contact with said segment, substantially as shown and de-

scribed. 2nd. The combination, with the valve-rod and a segment, of a lever pivotally connected with said valve rod and guiding said segment, cams or clutches pivoted on said lever and held in contact with said segment, and a lever for moving said cams out of contact with said segment, substantially as shown and described 3rd. The combination, with the valve rod and a segment, and a lever pivotally connected with said valve rod and guiding said segment, of cams pivoted on said lever and held in contact with said segment, a plate having inclined slots engaging said cams, and a lever for moving said slotted plate, substantially as shown and described. 4th. The combination, with a valve rod and a segment, and a lever pivotally connected with said valve rod and guiding said segment, of cams pivoted on said lever and added to engage said segment, a plate provided with inclined slots engaging said cams, a spring exerting an inward pressure against said plate, and a lever for moving said plate outward, substantially as shown and described. 5th. The combination, with a valve rod and a segment, of a lever pivotally connected with said valve rod and guiding said segment, cams pivoted on said lever and adapted to engage said segment, pins projecting from said cams, a plate guided on said lever and provided with inclined slots engaging said pins, a spring exerting an inward pressure against said top plate, and a second lever fulcrumed on said first-named lever and pivotally connected with said slotted plate, substantially as shown and described

No. 28,142. Pickle Tub or Keg.

(Cuvette ou baril à conserves.)

Arthur Ames, Brantford, Ont., 7th December, 1887; 5 years.

Claim In a pickle or other packing tub, the combination of lugs E, E and eye-bolts F, F, with slots D, D, in bar C, substantially as and for the purposes hereinbefore set forth.

No. 28,143. Gas Pressure Regulator.

(Régulateur de la pression du gax.)

Samuel A Beatty, New York, N. Y., U S., 7th December, 1887; 5 years.

Claim.—1st. In a gas-pressure regulator, the combination, with the cup *d* having its edge immersed in a sealing fluid and arranged to be operated by the pressure of the gas, of the rod 10 connected to the cup and provided, at its lower end, with the pressure-regulating valve 20 having the central opening 19, the removable sleeve *f* forming a seat for the edge of the valve and having the disk 3 for closing the central opening of the valve, and the removable cover *g*, the whole being so arranged that the cup-valve and seat can be removed without disturbing the sealing fluid, substantially as described. 2nd. In a gas pressure regulator, the combination, with the cup *d* having its edge immersed in a reservoir of sealing fluid, and arranged to be operated by the pressure of the gas, of the rod 10 connected to the cup and provided at its lower end with the pressure-regulator valve 20, having the central opening 19, the removable sleeve *f*, forming a seat for the edge of the valve, and having the disk 3, for closing the central opening 19 of the valve, the hood 18, the removable guide-plate 11 and the removable cover *g*, the whole being so arranged that the cup valve and seat can be removed from the regulator without disturbing the sealing fluid, substantially as described.

No. 28,144. Dress Shield. *(Doublure de corsage.)*

Christy M. A Campbell, Ottawa, Ont., 7th December, 1887 : 5 years.

Claim.—A dress shield, composed of a body-piece, an arm-piece and two elastic straps, the meeting edges of the body-piece and arm-piece being cut on different circles or curves and one of the straps secured to the body-piece and the other to the arm-piece, substantially as described.

No. 28,145. Show Stand or Case.

(Montre de magasin.)

James K. Cleary, Washington, D. C., U. S., 7th December, 1887; 5 years.

Claim.—1st. A revolving show stand or case, provided with a number of sliding shelves extending entirely through the same between two of its sides, and adapted to be drawn out from either side, substantially as described. 2nd. A revolving show stand or case, provided with a number of sliding shelves extending entirely through the same between two of its sides, and recessed in their upper surfaces to receive one or more boxes of the like, to prevent the same from slipping off when the shelves are drawn out, substantially as described. 3rd. A revolving show stand or case, constructed of the uprights *a*, having suitable top and bottom, the shelves *d* set in the inner sides of said uprights and formed or provided with the grooved strips *f*, and sliding shelves supported by said shelves *d*, and moving between said strips and uprights, substantially as described. 4th. A show stand or case, provided with a number of sliding shelves extending entirely through the same, between two of its sides, and adapted to be drawn out from either side, in combination with a movable base having circular track and the centrally supporting pivot, and anti-friction rolls traveling said track, by which the case may be revolved to bring either side thereof to view, substantially as described. 5th. A revolving show stand or case, provided with a number of sliding shelves having strips *i* and extending entirely through the same, between two of its sides, and adapted to be drawn out from either side, the said case being also provided in opposite sides at the bottom with a number of drawers, substantially as described.

No. 28,146. Blower. *(Machine soufflante.)*

Laura Z. Smith, (assignee of Wright D. Smith), Detroit, Mich., U.S., 7th December, 1887 ; 5 years.

Claim.—1st. A fan or blower case constructed with supports, whereby the case may be located in different position to direct its discharge in different directions, substantially as described. 2nd A fan or blower case, constructed with supports projecting beyond the periphery of the case at its four quarters, whereby the case may be located to direct its discharge in either direction horizontally, or in either direction vertically, substantially as described. 3rd. An adjustable bracket for carrying the driving shaft of a fan or blower, substantially as described. 4th. The combination, with a fan or blower case, of a bracket for carrying the driving shaft, said bracket adjustably connected with the case, substantially as described. 5th. A bracket for carrying the driving shaft of a fan or blower, and in combination therewith, bearings to receive the shaft, said bearings adjustably connected with said bracket, substantially as described. 6th. A bracket for carrying the driving shaft of a fan or blower, said bracket provided with sleeves D4, D5, substantially as described. 7th. An adjustable bracket for carrying the driving shaft of a fan or blower having, in combination therewith, bearings to receive the shaft, said bearings adjustably connected with said bracket, substantially as described. 8th. A bracket for carrying the driving shaft of a fan or blower provided with sleeves D4, D5, and in combination therewith, bearings to receive the shaft, said bearings adjustably engaged with said sleeves, substantially as described. 9th. An adjustable bracket for carrying the driving shaft of a fan or blower provided with sleeves D4, D5, and in combination therewith, bearings to receive said shaft, said bearings adjustably engaged with said sleeves, substantially as described. 10th. The combination, with a fan or blower case, of a bracket adjustably engaged therewith for carrying the driving shaft, bearings to receive said shaft adjustably engaged with said bracket, substantially as described. 11th. The combination, with a fan or blower case and its driving shaft, of a bracket adjustably engaged with said case and provided with sleeves D4, D5, and bearings to receive said shaft adjustably engaged with said sleeve, substantially as described. 12th. A bracket for carrying the driving shaft of a fan or blower, said bracket adapted to be adjustably engaged with two separate fan or blower cases, substantially as described. 13th. A bracket for carrying the driving shaft of a fan blower having, in combination therewith, bearings for receiving said shaft, said bearings adjustably engaged with the bracket, and said bracket constructed to be adjustably engaged with two separate fan or blower cases, substantially as described. 14th. The combination, with two fan or blower cases, of a bracket for supporting the driving shaft, said bracket adjustably engaged with each of said cases, substantially as described. 15th. The combination, with two separate fan or blower cases and their driving shafts, of a bracket adjustably engaged with each of said cases, said shaft provided with bearings adjustably engaged with said bracket, substantially as described. 16th. A bracket for carrying the driving shaft of a fan or blower provided with sleeves D4, D5, and in combination therewith, bearings for carrying said shaft, said bearings adjustably engaged with said sleeves by means of set screws, substantially as described. 17th. A bracket for carrying the driving shaft and pulley of a fan or blower, said bracket having rims constructed to be adjustably engaged with the fan or blower case, said rims connected by cross-arms, substantially as described. 18th. A bracket for carrying the driving shaft and pulley of a 3an or blower, said bracket having a rim constructed to be adjustably engaged with a fan or blower case, cross-arms connecting said rim with sleeves D4, D5, substantially as described. 19th. A bracket for carrying the driving shaft and pulley of a fan or blower, said bracket provided with a rim and sleeve D4, D5, said rim connected with said sleeves and constructed to be adjustably engaged with a fan or blower case, substantially as described. 20th. A bracket for carrying the driving shaft of a fan or blower, said bracket having one or more rims provided with elongated slots, whereby said bracket may be adjustably engaged with a fan or blower case, substantially as described. 21st. A bracket for carrying the driving shaft of a fan or blower having in combination therewith, sleeves D4, D5, bearings provided with annular slots, said bearings adjustably engaged with said sleeves by means of set screws entering said slots, substantially as described. 22nd. The combination, with a pair of fan or blower cases, of an intermediate connecting bracket, supports upon each of said cases, whereby it may be turned to direct its discharge in either direction vertically, or in either direction horizontally, and devices whereby said bracket is adjustably engaged with each of the cases, substantially as described. 23rd. In a fan blower wheel, the combination, with a hub, of a series of fan blades radiating therefrom, and a conical shell having its apex at or near the front end of the hub and extending thence toward the rear and toward the peripheries of the blades, the rear edges of the latter joining the surface of the conical shell from the apex of the cone to the periphery thereof, substantially as described. 24th. In a fan blower wheel, the combination, with a hub, of a series of fan blades radiating herefrom, and a conical shell integral with the hub and extending from its apex at or near the front of the hub rearward and outward, to form a concavo-conical face, the fan blades being curved upon their rear edges to have contact with the face of said shell throughout the length of said blades, and being cut away on their front edges adjacent to the hub, substantially as described. 25th. In a fan blower wheel, the combination, with a hub having a concavo-conical shell formed integral therewith, of fan blades radiating from said hub and formed integral with it and with the concave face of the shell, said blades being cut away upon their front edges near the hub, substantially as described. 26th. In a fan blower, the combination, with the casing having an inlet opening, of a shaft., the hub F, the concavo-conical shell formed integral therewith, and the blades radiating from and formed integral with the said hub and with the concave face of said shell, substantially as described. 27th. In a fan blower wheel, the combination, with a hub, of a series fan blades radiating therefrom in straight lines, at substantially right angles thereto, and a cone-shaped disk having its apex directed toward the forward end of the hub, said disk being extended from said hub rearward behind the blades and outward the whole depth of the blades and having its rear edge curved to terminate at, or nearly at right angles with the bore of the hub, the said blades being rigidly engaged upon the face of the disk and upon the hub, substantially as described.

No. 28,147. Apparatus for Breaking, Scutching and Cleaning Flax, Hemp, etc. *(Machine à broyer, teiller et nettoyer le lin, le chanvre, etc.)*

William S. Johnston, Newtownards, Ireland, 7th December, 1887; 5 5 years.

Claim.—1st. In a machine for breaking, cleaning or scutching flax, or other like fibre plant, a series of clamps H, H, travelling on a carrier F longitudinally to the machine, and holding the flax suspended during its course in such position that it can be acted upon by a pair of beaters B, B1, substantially as described. 2nd. In a machine for breaking, scutching or cleaning flax, or other like fibre plant, the combination of the two beaters B, B1 with circles of rotation intersecting each other, and a carrier F, having travelling clamps H travelling vertically in a line over the line of intersection, substantially as described 3rd. A carrier F inclined near the beginning of its course and horizontal, or nearly horizontal, for the remaining distance, for the purposes described, whereby the flax is gradually brought under action, and the motive power of its descent is available for pushing the clamps of flax in front along. 4th. In a flax breaking or scutching machine, the combination of two pairs of beaters, side by side, and two carriers F arranged to carry in opposite direction, whereby one-half of the flax is scutched in the forward travel, and the other half in the return travel. 5th. The beaters B, B1, consisting of central axle or cylinder J, arms G and longitudinal blades D and E. 6th. The combination, in a beater for scutching crude fibres, of radial blades D and tangential blades E, substantially as described 7th In a beator, the tangential blades having corrugated edges, substantially as described. 8th. In a scutching machine, the combination of a pair of rotating beaters geared together, with intersecting circles of rotation, and a device for holding the fibre suspended immediately above the point of intersection and hanging down so as to be acted upon by the beaters, whereby the fibre is bent in opposite direction with a series of blows rapidly following each other, and thus the woody matter broken and beaten out at one operation.

No. 28,148. Manufacture of Lubricating Oils and Greases. (*Fabrication des huiles et graisses de lubréfiage.*)

Maximilian J. Harting, Botany, and William Gallagher, Sydney, N.S.W., 7th December, 1887; 5 years.

Claim.—The improvement, in the manufacture of lubricating oils and greases, consisting in adding of mineral or other oils, an acid or neutral aluminous soap, preferably in the proportions set forth.

No. 28,149. Lantern Globe, Chimney, etc.

(Globe, cheminée, etc., de lanterne.)

The Lantern Globe Company, (assignee of George B. Barnes,) Bellaire, Ohio, U.S., 9th December, 1887, 5 years.

Claim.—1st. The method of making glass globes, chimneys and analagous articles, with an attached lens or lenses, which consists in blowing glass into a mould to form the article with a lens seat upon the same, then in putting the article while hot into proper relation to a press, placing and retaining molten glass upon the lens seat, and forming by pressure upon such molten glass a lens upon the outside of the article and integral therewith, substantially as described. 2nd As a new manufacture, a globe or analagous article having a lens or lenses integral therewith located upon a flat seat, which is supported at its sides by shoulders, substantially as described.

No. 28,150. Doubletree. (*Volée de derrière.*)

James R. Freeland and Edwin C. Bradley, Willsville, N. Y., U. S., 9th December, 1887; 5 years.

Claim.—The combination of a bearing-plate adapted to be secured upon the tongue and formed with the transverse aperture, and the lips having the vertical apertures adapted to receive a king-bolt, the regulator-yoke having the shoulders on each side of its central portion and having its outwardly-bent ends adapted to be secured to the doubletree, and the springs or cushions arranged as described, substantially as and for the purpose shown and set forth.

No. 28,151. Reversible Plough.

(Charrue tourne-oreille.)

Neil McLean, Watsonville, Cal., U. S., 9th December, 1887; 5 years

Claim.—1st. A reversible plough having single continuous land-side with double points and shares, hinged swinging double mould-board standard extending through and journalled in the beam, and having a clamp-plate attached to it bearing on the beam, the clamp dogs engaging said plate and having shanks extending through the beam and pivoted to eccentrics with levers, substantially as set forth. 2nd The combination of the beam A, standard D, plate E, dogs F, cam levers F1, F11 and link F111, substantially as set forth. 3rd. The combination of the journalled standard D, shares H, H and pivoted double mould-board I, substantially as set forth. 4th. A reversible plough having single continuous land-side with double points and shares, hinged swinging double mould-board standard extending through and journalled in the beam standard, provided with lock plate bearing on the beam and in combination with a suitable locking device, substantially as set forth.

No. 28,152. Apparatus for Drawing off Beer from Casks. (*Appareil pour tirer la bière des barils.*)

William Carson, Montreal, Que., 9th December, 1887; 5 years.

Claim.—1st. In the connections of a beer cask and point of discharge of the beer and interposed between them, a cylinder connected with the pipes and a perforated cylinder with stopped perforated end held in it, as and for the purposes set forth. 2nd. The combination, with the pipes B, B1, of the cylinder A, with ends A1, A2, and perforated cylinder C, with stopped end C2, and provided with shoulder C1 resting against shoulder *a*, all as and for the purposes described.

No. 28,153. Process of Treating and Desilverizing Copper Matte. (*Mode de traitement de la matte de cuivre et en extraire l'argent*)

John J. Crooke and Robert Crooke, New York, N.Y., U.S., 9th December, 1887; 5 years.

Claim.—1st. The process of recovering the precious metals from copper matte, which consists in subjecting the matte to contact with a body of lead, both being in a fused condition, and at the same time eliminating the sulphur from the lead through the agency of a body of iron, which is in contact with the lead but not with the matte, substantially as described 2nd. The process of recovering the precious metals from copper matte, which consists in subjecting the matte to contact with a body of lead, both being in a fused condition, and at the same time eliminating the sulphur from the lead through the agency of a body of iron, which is in contact with the lead but not with the matte, and then treating the matte in the same manner with a second body of lead which is poorer in silver than the first, substantially as described. 3rd The process of recovering the precious metals from copper matte, which consists in subjecting the matte to contact with a body of lead, both being in a fused condition, and at the same time eliminating the sulphur from the lead through the agency of a body of iron, which is in contact with the lead but not with the matte, and then re-using the lead in the same manner with a fresh quantity of matte, substantially as described. 4th. The process of recovering the precious metals from copper matte and at the same time concentrating and purifying the matte, which consists in subjecting the matte to contact with a body of lead, both being in a fused condition to recover the precious metals and adding silica to the matte to effect the formation of a slag, substantially as described. 5th. The process of recovering the precious metals from copper matte, and at the same time concentrating and purifying the matte, which consists in subjecting the mat to contact with a body of lead, both being in a fused condition, and at the same time eliminating the sulphur from the lead through the agency of a body of iron, which is in contact with the lead but not with the matte, and adding silica to the matte, substantially as described.

No. 28,154. Tubular Lantern.

(Lanterne tubulaire.)

Frederick Dietz, New York, N.Y., U.S., 9th December, 1887; 5 years.

Claim.—1st. In a tubular lantern or lamp, the combination, with the globe, dome, bottom plate and connecting side wires, of the spring lock and holder secured at its upper end to the upper part of the structure, passing through a slot in the dome and arranged to bear upon said dome, substantially in the manner and for the purposes set forth 2nd. In a tubular lantern or lamp, the combination of the spring lock and holder secured at its upper end to the upper part of the structure, a movable dome and the globe connected therewith, and a hinged lifter arranged to bear against and release the spring lock and holder, substantially as shown and described.

No. 28,155. Toaster. (*Gril.*)

Julia A. Downey, Oberlin, Ohio, U.S., 9th December, 1887; 5 years.

Claim.—The toasting plate *a*, having an upturned rear end *b* and a suitable handle *c*, in combination with the wire frame *d*, hinged to the upturned rear end of said plate by means of hinges *e* and a catch *h*, substantially as shown and described.

No. 28,156. Tricycle. (*Tricicle.*)

Benjamin M. Pearne, Oxford, N. Y., U. S., 9th December, 1887, 5 years.

Claim.—1st. In combination, the main driving shaft arranged to have sliding movement, the supporting frame for said shaft, the sprocket-wheel carried by said shaft and adapted to have rotary movement independent of the same, the clutches *g*, *h* held to the supporting frame, the clutch pins *e*, *f*, arranged upon the sprocket-wheel, the gear mechanism, substantially as described, whereby the rotary movement of the driving shaft is imparted to the sprocket-wheel to a greater or less degree, according as the sprocket-wheel be in engagement with the right or left-hand clutch, all substantially as described. 2nd. In combination, the sliding shaft, the single sprocket-wheel carried thereby, the clutches upon either side for giving the sprocket-wheel a differential movement, and the hand-cranks, whereby the shaft may be rotated and shifted from side to side, substantially as described. 3rd In combination, the sliding shaft carrying loosely the sprocket-wheel, the pinion fixed to the shaft, the face plate supported by the sprocket-wheel, substantially as described, the clutch-pins and pinions carried by said face plate, the internal gear upon the sprocket wheel, and the clutch pins *h* upon the main frame, substantially as described. 4th. In combination, a main driving shaft D, a sprocket-wheel E carried thereby, a supporting frame for the shaft D, means for shifting the sprocket-wheel E from side to side, means, substantially as described, carried by the shaft for engaging directly with the sprocket-wheel when in one position, whereby the movement of the shaft will be imparted directly and fully to the sprocket, a gear-wheel and intermediate mechanism for actuating said sprocket-wheel when in the opposite position, whereby the movement of the shaft will be directly imparted to the sprocket and at a decreased rate, all substantially as described. 5th. In combination, the main driving shaft arranged to slide longitudinally in its bearings, the supporting frame for said shaft, the sprocket-wheel mounted upon said shaft, so as to have the same sliding movement as the shaft, but rotary movement thereof, a clutch splined to the shaft upon one side of the sprocket-wheel and held to the frame, said clutch being adapted to engage directly with the sprocket-wheel, when the shaft is in one position, a gear-wheel fixed to the shaft, intermediate mechanism between said gear and the sprocket-wheel, clutch mechanism upon the other side of the sprocket adapted to throw the said mechanism into action when the shaft is shifted to its other position, all substantially as described.

6th. In combination, the main driving and supporting wheels, the main supporting frame extending approximately horizontally to the front and supporting the guiding wheel at its forward end, the wire netting between the sides *g*, *g*, substantially as described. 7th. In combination, the axle B, the side rods *g g*, having the axle bearings, said rods extending downwardly from the axle and to the front, the driving shaft D adapted to be driven by hand, the sprocket E, the braces 7 extending from a point over the axle to the driving shaft, the brace 8 extending from the front of the frame *c* to the driving axle, all substantially as described.

No. 28,157. Device for Connecting the Armature Coils with Commutator Plates of Dynamo Electric machines. (*Appareil pour raccorder les bobines d'armatures avec les plaques de commutateurs des machines dynamo-électriques.*)

James W. Easton, Reading, Penn., U. S., 9th December, 1887; 5 years.

Claim.—1st. The combination, with the armature bobbin of an electric machine and a commutator plate, of a yielding connection between the two parts, substantially as described. 2nd The combination, with an armature coil of an electric machine and a collector plate, of a coiled spring connecting the two electrically. 3rd. The combination, with an armature and a commutator or collector plate, of a coiled spring surrounding the end of the wire of the armature and pressing against the commutator plate, substantially as described. 4th The combination, with the conductor of an armature bobbin, of a commutator or collector plate, a projection upon the same, and a coiled spring surrounding said projection and said conductor, and pressed between them, substantially as described. 5th. The combination, with the conductor, of an armature bobbin, a commutator or collector plate, a projection upon the same, and a coiled spring surrounding said projection and said conductor, and soldered thereto. 6th. The combination, with the armature bobbins of an electric machine and the commutator or collector plates, of a fusible flexible connection between the same, substantially as described.

No. 28,158. Carriage Top. (*Soufflet de voiture*)

Morris F. Eldridge, Toledo, Ohio, U.S., 9th December, 1887; 5 years.

Claim—1st. In a carriage top, a front bow supported by hinges attached thereto and to the central bow, as and for the purpose set forth. 2nd. In a carriage top, in combination with the rear and central bows, a front bow terminating at each side at or near the curvature of the top, and supported by hinges attached thereto and to the central bow, and a flexible stay connected to the front and rear bows and passing through the hinge sections, as and for the purpose set forth.

No. 28,159. Chain and Chain Making. (*Chaîne et fabrication des chaînes.*)

Joseph A. Jeffrey, Columbus, Ohio, U. S., 9th December, 1887; 5 years.

Claim.—1st. A chain link, having a tubular end bar formed of steel to receive the pintle, substantially as set forth. 2nd. A chain link having a tubular end bar formed of steel, a steel pintle, and side bars connecting the pintles and the tubular end bar, substantially as set forth. 3rd. A chain link, having the side bars formed separately from each other, a pintle, and a tubular end bar, formed separately from the side bars substantially as set forth. 4th. A chain link, having the side bars formed separately from each other, the pintle, and the tubular end bar for the pintle, formed separately from and rigidly to the side bars, substantially as set forth. 5th A chain link, having the side bars formed separately from each other, the pintle and the tubular end bar formed in separable sections, each section being constructed separately from, but rigidly secured to, one of the side bars, substantially as set forth. 6th. The herein described chain link, it having side bars formed with perforations at the ends, the thimble formed separately from the side bars and rigidly secured in the said perforations at the ends, and a pintle adapted to pass through such a thimble and to be fastened in place, as described. 7th. The herein described improvement in the art of making chain links, it consisting in forming strips or bars to serve as side bars of the links, forming apertures in the said bar at the ends, cutting tubings into sections, inserting the said tube sections into the apertures of the said side bars, and fastening the said tube sections rigidly in place, substantially as set forth. 8th. The combination, with the link, having the side bars formed separately from each other, the tubular bearing formed separately from, and rigidly secured to the said side bars, of the pintle situated in the said tubular bearing, and the side bars of the adjacent link rigidly secured to the said pintle, substantially as set forth.

No. 28,160. Hog Ring. (*Anneau de pourceau.*)

Alexander C. Decker, Keokuk, Iowa, U. S., 9th December, 1887; 5 years.

Claim.—1st. As a new article of manufacture, a hog-ring blank comprising a long, straight side *a*, a short branch or end *b*, turned over at something beyond a right angle to the side *a*, and longer end *c* bent in substantially semicircular form, and also turned over at something beyond a right angle to the side *a*. 2nd. A hog-ring blank comprising a long, straight side *a*, long and short ends *c* and *b*, turned over at something beyond a right angle to the side *a*, the material forming the ring being elliptical in cross-section, as and for the purpose set forth.

No. 28,161. Rest for Carriage Top Bows. (*Support des branches des capotes de voitures.*)

John W. Currier, North Troy, Vt., U.S., 9th December, 1887; 5 years.

Claim.—1st. A hollow or trough-shaped rest attached to an arm projecting from the box or seat of a carriage, and arranged to receive and support the bows of the carriage top, substantially as herein shown and described. 2nd. In the above described device, the hollow rest B provided with the rubber knobs *c*, and having attached to it the clamp ring D, which is secured on the sleeve E on the arm A, substantially as herein shown and described. 3rd. In the above-described device, the hollow rest B made integral with the sleeve D, which is fitted on the arm A, substantially as shown and described and for the purpose set forth.

No. 28,162. Creamer. (*Garde-lait.*)

Alviras Snyder, Dryden, N Y., U. S., 9th December, 1887; 5 years.

Claim.—1st. The vat *g* and oblong flattened cans *i* arranged side by side therein, in combination with the gates *11*, *12*, *13*, *14*, at their ends, whereby one or more of the cans of the series are shut off from use, or the current regulated about them, as set forth. 2nd. The vat *g*, bent inward, as shown, in its front wall, and having below the said bent part, a series of recessed parts *g*, provided with openings, in combination with the cans *i*, having windows *j*, as set forth.

No 28,163. Treating Hydrocarbon Oil. (*Traitement des hydrocarbures.*)

Henry C. Thurber, Marquette, Mich. (assignee of Thurston G. Hall, Chicago, Ill., U.S., 9th December, 1887; 15 years.

Claim.—1st. The process of manufacturing hydrocarbon oil, which consists in subjecting the mingled vapors of a hydrocarbon oil and steam to large converting surfaces of granite, or equivalent material, heated to a temperature of about 420° F., by passing said vapours through, and in contact with the converting material, and in subsequently condensing the same, substantially as described.

No. 28,164. Mantel. (*Manteau de cheminée.*)

William A. Lilliendahl, Jersey, N.Y., (co-inventor with John Graves, New York, (N Y.), U.S., 9th December, 1887; 5 years.

Claim.—1st. The sheet metal mantel having the profile piece pilaster and wall plates at each side in one piece of sheet metal, stamped up to a shape in dies and having stiffening ribs or coves, substantially as set forth. 2nd. The sheet metal mantel having panels, ribs or coves pressed into the same, and the two halves setting into each other at the centre of the frieze and attached together, and having an ornament over the joint at such central portion, as set forth 3rd. The mantel front, having at each side a pilaster *a*, and a profile piece *b* in one piece of sheet metal, with corrugations *b1* at the edges, substantially as set forth. 4th. The sheet metal mantel front having the pilaster and frieze portions in one, and pressed up with stiffening ribs and coves, substantially as set forth. 5th. The sheet metal mantel front having pilasters and frieze and a backwardly-bent flange at the top edge, in combination with the sheet metal mantel shelf, substantially as set forth. 6th. The sheet metal mantel front, having pilaster and frieze and jamb in one piece at each side of the fire-place, substantially as set forth. 7th. The sheet metal mantel shelf, having a downwardly rolled edge at the front, and a flange at the back, substantially as set forth.

No. 28,165. Filter. (*Filtre.*)

William M. Deutsch, Elizabeth, N. J., U. S., 9th December, 1887; 5 years.

Claim.—1st. The combination, with the filter and filtering bed, of the perforated washing pipes K arranged horizontally in, and a short distance below, the top of the filtering bed, and extending substantially across the whole filtering bed, and supplying washing water throughout the whole upper area of the same at one and the same time, and connected separately to the pipe through which the washing water is supplied, substantially as described. 2nd. The combination, with the filter, of a plurality of series of perforated washing pipes *i*, *k*, arranged horizontally in the filtering bed at different heights, and connections for sending the washing water into either of said series of pipes, substantially as described. 3rd. The combination, with the filter and its induction and discharge pipes, of the perforated washing pipes *k* arranged horizontally in, and a short distance below the top of the filtering bed, and connected separately to the pipe through which the washing water is supplied, and connections between said last pipe and the induction and discharge pipes, whereby the top of the bed may be washed with either filtered or unfiltered water, substantially as described. 4th. The combination, with the filter and its induction and discharge pipes, of a plurality of series of perforated washing pipes arranged horizontally in the filtering bed at different heights, and connections between said washing pipes, and both the induction and discharge pipes, whereby the bed may be washed with either filtered or unfiltered water, substantially as described. 5th. The combination, with the horizontal perforated washing pipes having the vertical branches 6 at their ends, of the valves 7 for opening communication between the washing pipes and said branches, substantially as described. 6th. The combination, with the horizontal perforated washing pipes, of the rods 8 extending the length of said pipes, whereby the granular material in said pipes may be loosened so as to be carried out by the washing water, substantially as described. 7th. The combination, with the filter and the filtering bed and the discharge pipe located in the bottom of the bed, of a perforated pipe surrounding the discharge pipe and providing a space between the two, substantially as described. 8th. The combination, with the filter and filtering bed, of a perforated discharge pipe located in the bottom of the bed, a perforated pipe surrounding said perforated discharge pipe, and a body of coarse material *f* located in the space between the two pipes, substantially as described. 9th. A filter discharge pipe provided with several branches having valves or cocks for directing the full force of the current through different portions of the filter bed in cleansing the same, substantially as described. 10th. The combination, with a filter having its bottom portion divided into a number of compartments, of the discharge pipe arranged to communicate with each compartment separately, substantially as described. 11th. The com-

bination, with the filter, having its bottom portion divided into a number of compartments by vertically arranged partitions, of a discharge pipe having perforated branches which communicate with each compartment separately, perforated pipes enclosing the perforated portion of each of said branches, and bodies of coarse material *f* located in the space between said pipes, substantially as described. 11th. The combination, with a filter having induction and discharge pipes arranged to maintain a continuous flow of water through the filter or the chamber *m* located inside the filter, and containing a precipitating substance, and provided with openings through which a portion of the water passing through the filter is allowed to come into contact with said substance, so as to carry a portion of it out of the chamber, substantially as described. 13th. The combination, with a filter having induction and discharge pipes arranged to maintain a continuous flow of water through the filter, of the chamber *m*, located inside the filter and containing a precipitating substance, and provided with openings through which a portion of the water passing through the filter is allowed to come into contact with said substance, so as to carry a portion of it out of the chamber, and means for regulating the amount of precipitating substance discharged from the chamber, substantially as described. 14th. The combination, with a filter having induction and discharge pipes, arranged to maintain a continuous flow of water through the filter, of the chamber *m*, located inside the filter and containing a precipitating substance, and provided with the openings *l* and the adjustable shell *n* for regulating the size of the openings *l*, substantially as described. 15th. The combination, with the filter and the filtering bed, of the pipes *d* communicating with discharge pipe D and having the perforated branches c and being of larger size at their inner ends than at their junction with the pipe D, substantially as described.

No. 28,166. Magazine and other Fire-arms.

(*Arme à feu à magazin el autres.*)

James P. Lee, Ilion, N.Y., U.S., 9th December, 1887; 5 years.

Claim.—1st. The peculiar construction and arrangement of the extractor and i spring, substantially as described, so that they can be readily inserted and removed without the use of a screw-driver or other tool, and the stronger the backward pull on the breech-bolt, the tighter the extractor will grip the flange of the cartridge case with which it may be in engagement, as above specified. 2nd. The provision of a bevelled extension or projection E¹ on the extractor, adapted to fit a recess in the body of the breech-bolt, substantially as described, so that the extractor will be securely held in place when the two parts of the said bolt are united, as above specified. 3rd. The construction and arrangement of the breech-bolt and the extractor, substantially as described, so that the forward end of the body of the said bolt will serve as a cam for forcing the extractor into engagement with the flange of a cartridge in the barrel during the turning of the said bolt into its locking position, as above specified. 4th. A breech-bolt having a removable head secured thereto by means of a lever-screw, substantially as and for the purpose set forth. 5th. A firing pin having a removable head secured thereto by means of a lever-screw, substantially as and for the purpose set forth 6th. The provision of means for connecting the head of the breech-bolt with the firing pin in such a manner that the said bolt-head can be used as a wrench for screwing the said firing pin into the cocking piece, and unscrewing it therefrom, as above specified. 7th. The combination, with the breech bolt, of the peculiarly-shaped handle upon which the thumb can be placed while the trigger is being pulled, as and for the purpose above specified. 8th. The employment, in combination with the tripper guard, of a transversely sliding catch for securing the cartridge magazine in the gun, substantially as set forth. 9th. The employment of a stud or projection on the interior of the shoe or body of the gun, having an inclined roughened surface, as and for the purpose above specified. 10th. The improved magazine rifle consisting of the parts constructed and combined substantially as described, with reference to Fig 1 to 10 of the drawings. 11th. The improvement in my gun, whereby I provide for the use of a divided gun stock, substantially as hereinbefore described. 12th. The improved device, substantially as described, with reference to Fig. 13, 14 and 15 of the drawings, whereby I provide for closing the mouth of the magazine, as and for the purpose above specified. 13th. A skeleton cartridge magazine, that is to say, a magazine formed with the sides thereof open, substantially as hereinbefore described. 14th. The employment, in combination with a cartridge magazine, of a follower formed with shoulders or projections adapted to engage with turned-in edges or projections in the said magazine, substantially as and for the purpose set forth. 15th. The employment in a cartridge magazine, of one or more C-shaped or coiled or partially coiled springs, substantially as and for the purpose set forth. 16th. The employment in a cartridge magazine, of one or more wire springs, substantially as and for the purpose set forth. 17th. The improved cartridge magazine provided with the follower and the spring, or springs, substantially as described and as shown in Fig. 16 to 20, or in Fig. 21 and 22, or in Fig. 23 and 24 of the drawings. 18th. The employment of a shield or cover arranged to slide to and fro with the breech-bolt, substantially as and for the purpose set forth. 19th. The combination, with the extractor, of a pin or rod fitted to slide longitudinally in a hole in the breech-bolt and acted upon by a spring inserted in the said hole, substantially as described with reference to Figs. 25 to 28 of the drawings, for the purpose specified. 20th. The improved means, substantially as described, with reference to Fig. 27 and 28 of the drawings, whereby I provide for securing the head of the breech bolt to the body thereof, as above specified. 21st. The improved automatic ejector consisting of the spring attached to the shoe or body of the gun, and provided with a pin or stud extending through the said shoe or body, substantially as hereinbefore described. 22nd. The above described method of providing for the escape of any gas that may pass through the base of a cartridge in the barrel, by forming holes in the head of the breech-bolt and in the shoe or body of the gun so that when the breech is closed, the said holes will coincide with each other 23rd. The improved means, substantially as described, with reference to Figs. 25, 26, 29, 30 and 31 of the drawings, whereby I provide for connecting the shield or cover with the breech bolt, and for securing the head of the said bolt to the body thereof, as above specified.

No. 28,167. Device for Shifting the Thills or Shafts of Cutters or Sleighs. (*Appareil pour déplacer les limonières des traîneaux.*)

Hugh Duffey and Romanta D. Woodford, Cortland, N.Y., U.S., 10th December, 1887; 5 years.

Claim.—1st. The combination, in a sleigh, of the shaft-bar, the draw-irons secured thereto, the bar D secured to the cross-bar C, the central hanger secured to bar C and provided with an eye to receive the bar D, and the spring-holders pivoted to said hanger, substantially as and for the purposes set forth. 2nd. The combination, in a sleigh, of the shaft-bar, the draw-irons B, provided with bar, the bar D, secured to cross-bar C, the central hanger E and the spring-holders F, each provided with notches G and pivoted to the central hanger, substantially as shown and described.

No. 28,168. Felt Boot. (*Botte de feutre*)

Frank M. Fargo, Chicago, Ill., U.S., 10th December, 1887; 5 years.

Claim.—A felt boot consisting of homogeneous felted fabric, having the portion of its body from the ankle upward of graduated thickness integral with the body of the boot itself, substantially as described.

No. 28,169. Heating Device for Railway Cars. (*Calorifère pour chars de chemins de fer.*)

John Henney, jr., New Haven, Conn., and John A. Hodge, jr., New York, N.Y., U.S., 10th December, 1887; 5 years.

Claim.—In combination, with the steam cylinder of the air pump of a locomotive, a tube leading from the exhaust passage of said cylinder rearward, said tube being provided with connections adapted to couple the corresponding tubes of the carry of the train, substantially as described, and whereby the exhaust steam cylinder of the air pump will be conducted through the tubes in the car.

No. 28,170. Height Measuring Apparatus.

(*Appareil à mesurer la hauteur.*)

William P. Ingham, Middleborough-on-Tees, Eng., 13th December, 1887; 5 years.

Claim.—1st. The combination of the arm B with the vertical sliding bar or rod C, the lower end of the latter being turned up and provided with an aperture, substantially as and for the purpose hereinbefore described. 2nd. The combination of the spindle D, a double pulley E, the cords or tapes *f* and G, weights *g*, F, button g^1, and the pointer J attached to the bottom g^1, substantially as and for the purpose hereinbefore described. 3rd. The combination of the spindle D, either the pointer, or the dial or scale, a double pulley E (or two pulleys or wheels), the balance weight F being suspended at one side, and the weight *g* on the cord or tape G, at the other side of the said pulley or wheel, substantially as and for the purpose hereinbefore described. 4th. The combination of the arm B and sliding bar or rod C, with the cord or tape G, weight *g* and button g^1, substantially as and for the purpose described. 5th. The combination and arrangement of the brake or catch wheel H and lever I, with the mechanism referred to in the previous claims, substantially as and for the purpose hereinbefore described.

No. 28,171. Fire Extinguisher.

(*Extincteur d'incendie.*)

Jasper N. Matlock and James B. Frits, Brookville, Ks., U.S., 13th December, 1887; 5 years.

Claim.—1st. In fire-extinguishers in railway cars, the combination of the reservoir A for liquid under compression, the discharge cock T for the reservoir, the lever to open the said discharge cock, and the pendulum to normally support the said lever, having an adjustable weight P^2 thereon, for the purpose set forth, substantially as described. 2nd. The reservoir A for liquid under-compression, having the piston D provided with a head E, and the pipe H communicating with its upper and lower ends, said pipe having the three-way cock L, the pipe Y communicating with the cock, for the purpose set forth, and the pipe S leading from the lower end of the reservoir and having the cock T, substantially as described. 3rd. In a fire-extinguisher for railway cars, the combination of the reservoir for compressed air and water, or other extinguishing fluid, the pipe Z leading from the said reservoir and communicating with the lights, and provided with the stop-cock or valve A^2, the pipe U communicating with the stove and the reservoir, and having the stop-cock or valve T, the spring-actuated lever E^2 connected to the valves A^3 and T, and adapted to open the same, and the pendulum to support the said lever when the valves are closed, substantially as described. 4th. The reservoir for fire-extinguishing fluids having the discharge cock, in combination with the lever to open the said discharge cock, and the pendulum to normally support the said lever and provided with the adjustable weight, substantially as described. 5th. The combination of the reservoir A for liquid under compression, the piston D provided with a head E, the pipe H communicating with the upper and lower ends thereof, said pipe having the check valve K in its upper portion, the three-way cock L and the pipe T communicating with the said cock, the pipe U communicating with the lower portion of pipe H, and having the cock R and the funnel P, and the discharge pipe leading from the reservoir and having the stop-cock, substantially as described.

No. 28,172. Spirit Level. (*Niveau à bulle d'air.*)

Gustavus Cook, Watertown, N. Y., U. S., 13th December, 1887, 5 years.

Claim.—1st. A level, having a transparent bubble-tube supported at its ends, and left visible at its middle part, whereby the level may

be inverted or employed with either face uppermost. 2nd. A level, having an aperture in its bar inclosed at the sides with plates of transparent material, and a bubble-tube extending across said aperture within the space inclosed by the said transparent plates. 3rd. The combination, with the apertured bar, of the ring mounted adjustably therein, the plates of transparent material mounted in said ring, the bubble-tube of spindle shape mounted in, and extending across said ring, and mechanism for adjusting the ring in the bar 4th. A level, having a spindle-shaped bubble-tube, provided with a mark across its middle to serve as a bubble index when the level is used, said tube being mounted in and extending across an aperture in the bar, whereby it is rendered visible from both sides. 5th. The combination, with the bar A, of the ring B, pivoted in the bar on the pin c and provided with a lug *d*, the bubble-tube mounted in said ring, the screw *e* screwed into the lug *d* on the ring, and the spring *h* embracing screw *e* and arranged between the lug *d* and a shoulder on the bar A, substantially as set forth.

No. 28,173. Wheelbarrow. (*Brouette.*)

John P. Enderes, Pimento, Ind., U.S., 13th December, 1887; 5 years.

Claim.—1st. The combination of the body, having sides or side boards provided with slots to receive the edges of the end board and bolts for engaging in the eyes of said end board with the wheel, the axle, the boxes E, E1, the bearings located therein, and the bracket-bars F1, F11 and F111, as set forth. 2nd. In combination, the side-boards provided with slots to receive the ends of the rear end-board and upwardly-projecting bolts and the rear end board having eyes or staples to engage said bolts, for the purpose set forth.

No. 28,174. Grinding Machine. (*Aiguiserie.*)

Benjamin Reid, Utica, and Albert W. Alton, Port Perry, Ont., 13th December, 1887; 5 years.

Claim.—1st. In a grinding machine, the combination of the legs A, A1, cross-bar B, and C, yoke D, shaft E, cranks E1, treadles E11, pitmans *e*, stone F, seat G, trough H, bracket L, disk L1, link M, holder N, disk N1 and jaw O, substantially as set forth 2nd. In a grinding machine, the combination of the legs A, A1, cross-bar B rod C, yoke D, shaft E, crank E1, treadles E11, pitmans *e*, stone F, seat G and trough H, substantially as set forth. 3rd. In a grinding machine, the combination of the frame A, A1, B, C, yoke *D* having notches *d*, and adjustable trough H, substantially as set forth. 4th The combination of the cross-bar C, bracket L, wedge disk L1, link M, pins *m*, *m1*, holder N, wedge disk N1, having pins *n11*, jaw O having fingers *o*, lugs *o1* and finger *o11*, substantially as set forth.

No. 28,175. Combined Water Heater and Circulator. (*Calorifère à eau.*)

Theodore R. Chase, Detroit, Mich., U. S., 13th December, 1887; 5 years.

Claim.—1st. In combination with a boiler having an inner and an outer shell, with a water space between them, and the coiled pipe P having one end opening through the inner shell only into the water space of the boiler, and the other end communicating with the distributing chamber E. the distributing chamber C, the auxiliary pipes *n*, *n* and a flow or circulating pipe or pipes leading from the chamber C and returning to the boiler, at or near its bottom, as and for the purpose set forth. 2nd In combination with a boiler having an inner and an outer shell, with water space between them, and a distributing chamber, a series of coiled pipes P, P, one end of each pipe opening through the inner shell only of the boiler into the water space thereof, and the outer ends communicating with said distributing chamber, the auxiliary feed pipes connecting the boiler to the chamber E. and having distributing or flow pipes leading from said chamber C, and returning to the water space of the boiler through the outer shell thereof with the cut-off, substantially as described and specified.

No. 28,176. Cultivator and Seeder and Fertilizer Distributor. (*Scarificateur-semoir et distributeur d'engrais.*)

James A. Ogletree, Randall, Ark., U.S., 13th December, 1887; 5 years.

Claim.—1st. The combination, with the frame A mounted on a single axle B, of the fertilizer hopper C, the depending conveyor C secured thereto, having a rear opening, the cam-faced wheel 3 mounted on the axle B, and the automatically opening and closing cut-off plate C2, operating in connection with the opening in the rear of the conveyor C1, substantially as described. 2nd. The combination of the hopper C, having the depending conveyor C1, provided with a discharge opening, the rotating shaft B having the cam-wheel 3 and the arms 1 projecting into the conveyor through the discharge opening and the pivoted spring actuated cut-off plate C2, bearing against the cam-wheel and operated thereby, to automatically open and close the discharge opening, substantially as described. 3rd. In combination, with the frame A, the fertilizer distributer C, having the depending conveyer C1, provided with a rear opening, the cut-off plate C2, the spring C3, the single axle B, and the cam-faced wheel 3, substantially as described. 4th. In a combined cultivator, the combination of the supporting frame-work, the fertilizer distributer mounted on the forward portion thereof, and having a depending conveyer in proximity to the axle, and provided with the rear feed opening, a wheel mounted on the central part of said shaft and engaging the feed opening of the said depending conveyer, feed arms mounted on said wheel and adapted to regulate the flow of the material from the depending conveyer, a camway formed on the face of said wheel and a spring-actuated cut-off plate operated by said camway to open and close the feed opening of the depending conveyer, substantially as described. 5th. In combined cultivator, the combination of the supporting frame-work mounted on a single axle, the fertilizer distributer in the forward portion thereof, having the depending conveyer with the rear feed opening, the wheel on the central portion of the axle engaging the said feed opening, being adapted to be provided with different forms of feed arms, and automatically operating cut-off slide, adapted to close the feed opening of the said fertilizer distributer, and an agitator mounted within said fertilizer distributer and operating by an eccentric mounted on the axle, substantially as described.

No. 28,177. Truck. (*Camion.*)

Emory J. Benedict, Deli Rapids, Dak., U.S., 13th December, 1887; 5 years.

Claim.—1st. In a hand truck, the combination of the body, the points E secured to the upper surface of the body by the bolts which secure the bearings, and a swinging bail having inturned ends, which are journalled in recesses formed in the under surfaces of the bases of points E, substantially as described. 2nd The combination, in a hand truck, of the points E, provided above the bottom portion A with recesses *f* and *f1*, a spring F and bail G, having inturned ends with angular faces against which the spring contacts, substantially as shown and for the purpose set forth. 3rd. The combination, in a hand truck, constructed substantially as described, of a tranverse axle support, bolts for attaching said axle support to the body portion of the truck, and points E provided with perforations through which bolts pass, a spring F secured under the portions E by one of the aforesaid bolts, and a swinging bail 6, substantially as shown and for the purpose set forth. 4th. The combination, with a hand truck constructed substantially as described, of a handle B, consisting of parallel side pieces, having inturned portions *b1* and a hand-grasping cross-bar, substantially as shown and for the purpose set forth.

No. 28,178. Car Axle Box and Metal Packing for the Same. (*Boîte à graisse et garniture métallique de boîte à graisse.*)

Ferdinand W Machen and William H. Selkirk (assignees of Hamilton Rogers), Toledo, Ohio, U.S., 13th December, 1887, 15 years.

Claim.—1st. In a car axle box, in combination with a car axle, a dust board composed of two sections yieldingly connected, as and for the purpose set forth. 2nd. In a car axle box, a pivoted scraper adapted to automatically adjust the inclination of the same toward the box and in the direction of the rotation of the axle, as and for the purpose set forth. 3rd. A car axle box, provided with ribs having communicating passages, in combination with a flexible packing, as and for the purpose set forth. 4th A flexible packing for car axle boxes, composed of whole or in part of resilient metal, and means for holding the same in frictional engagement with the axle journal, as and for the purpose set forth. 5th. A car axle box, provided with a supplemental removable drip pan, and means for loading the escaping lubricant therein, as and for the purpose set forth. 6th. In a car axle box, a dust board having a scraper pivoted therein adapted to rest upon the axle, as and for the purpose set forth.

No. 28,179. Waterproof Garment.

(*Vêtement imperméable.*)

Harriet Judson, Brooklyn, N.Y., U.S., 13th December, 1887, 5 years.

Claim.—1st. As a new article of manufacture, a waterproof garment having a box plait opening inward, the upper extremity being secured to the garment at the collar, so as to present an unbroken surface, and a lacing cord adapted to conform the back of the garment to the shape and thickness of different fashions and kinds of garments, substantially as set forth. 2nd. As a new article of manufacture, a water-proof garment having a box plait opening inward, its upper extremity being secured to the garment at the collar, so as to present an unbroken surface, a lacing cord and a waist band F, substantially as set set forth. 3rd. As a new article of manufacture, a water-proof garment having a box plait opening inward, with its upper extremity secured to the garment, so as to present an unbroken surface, and its lower extremity running out into the fullness of the goods at the skirt, a lacing cord, a secondary box plait or series of gathers G, and a bolt tape, substantially as and for the purpose set forth.

No. 28,180. Button. (*Bouton.*)

Philip S. Landenschlager and Ames Weaver (assignees of Christian J. Nordhausen), Berlin, Ont., 13th December, 1887; 5 years.

Claim.—1st. A button, having the whole or a part of the face that is contained within a rim cut out of the solid body inlaid with fabric, the edge or edges of which is or are secured in a groove or grooves cut parallel to the axis of the button at the edge or edges of the face to be covered substantially as set forth. 2nd. In a button A, the combination of the face *a* and groove B cut parallel to the axis of the button at the edge of said face, substantially as set forth. 4th. In a button, the combination of the face *a*, rim *a1*, grooves B and fabric C, substantially as set forth 5th. In the manufacture of a button, as described, a chuck D having one or more thin annular rims or edges *d*, corresponding in position and number to grooves B in the face of button intended to be covered with fabric, substantially as set forth.

No. 28,181. Machine for Unhairing and Green Shaving Hides and Skins. (*Machine à peler et écharner les peaux.*)

The Vaughn Morocco Machine Company, Portland, Me. (assignee of Joseph W Vaughn, Peabody, Mass.), U.S., 15th December, 1887, 5 years.

Claim.—1st. In a machine for unhairing or green-shaving hides or skins, the combination of the following instrumentalities, to wit: a rotary table, means for securing a hide or skin to said table, a journalled roll provided peripherally with scrapers or cutters, means for causing said scrapers or cutters to press against a hide or skin on said table, and operative mechanism for the table and roll, substantially as described. 2nd. In a machine for unhairing or green-shaving hides or skins, the combination, of the following instrumentalities, to wit: a rotary table, means for securing a hide or skin to

said table, a journalled roll provided peripherally with scrapers or cutters, means for causing said scrapers or cutters to press against a hide or skin on said table, means for reversing the movements of the table, and operative mechanism for the table and roll, substantially as set forth. 3rd. In a machine for unhairing or green-shaving hides or skins, the combination of the following instrumentalities, to wit: a rotary table, means for securing a hide or skin to said table, a journalled roll provided peripherally with scrapers or cutters, means for causing said scrapers or cutters to press against a hide or skin on said table, means for reversing the movements of the table, means for moving the scrapers or cutters away from the hide or skin, and operative mechanism for the table and roll, substantially as described. 4th. In a machine for unhairing or green-shaving hides or skins, the combination of the following instrumentalities, to wit: a rotary table, means for automatically securing a hide or skin to the said table, a journalled roll provided peripherally with scrapers or cutters, means for causing said scrapers or cutters, means for causing scrapers or cutters to press against the hide or skin and operative mechanism for the table and roll, substantially as set forth. 5th. In a machine for unhairing or green-shaving hides or skins, a rotary table, means for automatically securing a hide or skin to said table, means for automatically releasing a hide or skin from said table, a journalled roll provided peripherally with scrapers or cutters, means for causing said scrapers or cutters to press against a hide or skin on said table, and operative mechanism for the table and roll, substantially as described. 6th. In a machine for unhairing or green-shaving hides or skins, a rotary table, means for automatically releasing a hide or skin from said table, a journalled roll provided peripherally with scrapers or cutters to press against a hide or skin on said table, means for reversing the movements of said table, means for moving said scrapers or cutters away from the hide or skin, and operative mechanism for the table and roll, substantially as set forth. 7th. In a machine for unhairing or green-shaving hides or skins, the combination of the following instrumentalities, to wit: a framework or body, a semi-cylindrical table journalled horizontally in said body, a roll provided with scrapers or cutters and journalled in parallelism with said table in pivoted arms mounted on said body, a clamping mechanism for automatically securing the hide or skin from said table, a treadle mechanism for depressing said roll and exerting a pressure on a hide or skin disposed on said table, means for elevating said roll or moving it away from said table, an automatic shipping mechanism adapted to reverse the movements of the table and stop it when it has returned to its normal position, and a hand-shipping mechanism for starting the machine, substantially as described. 8th. In a machine of the character described, the pivoted arms 22, provided with the jaw 24, in combination with the bar 25, a stop for said arms, and means for forcing said jaw against the hide or skin to clamp or secure it to the table, substantially as set forth. 9th. In a machine of the character described, the pivoted arms 22 provided with the jaw 24 and bar 23, in combination with the grooved bar 25, cords 32, weights 37, and stops 27, substantially as described. 10th. In a machine of the character described, the arms 23, provided with stops 30, in combination with the stops 27 and pivoted arms 23, provided with the stops 31 and bar 23, substantially as and for the purpose set forth. 11th. In a machine of the character described, the table V having the segment 18, provided with the staves 19 and covered with felt 20 and leather 21, substantially as described. 12th. In a machine of the character described, the straps 40, provided with the weights 45, in combination with the pulleys 42 and table V, substantially as and for the purpose described. 13th. In a machine of the character described, the arms T, U, mounted on the shaft R, in combination with the shipping-bar 90 provided with the cam T, substantially as set forth. 14th. The roll W, journalled in the pivoted arms 51, provided with the weights 52, in combination with the treadle mechanism for depressing said roll and causing it to press on a hide on the table V, substantially as described. 15th. In a machine of the character described, a table mounted on the shaft R, provided with the gear S, in combination with the shaft 83 provided with the pinion 84, and sprocket wheel 85, shaft 76 provided with the sprocket wheel 77 and pulleys 79, 80, 81 and 82, shaft 67 provided with the pulleys 69, 70, belts 86, 87, 88, and shipping mechanism for the belts 87 and 88, substantially as set forth. 16th. In a machine of the character described, a table mounted on the shaft R, provided with the gear S, in combination with the shaft 83 provided with the pinion 84 and sprocket wheel 85, shaft 76 provided with the sprocket wheel 77 and pulleys 79 80, 81, 82, shaft 67 provided with the pulleys 69, 70 and sprocket wheel 71, roll W mounted on the shaft 60 provided with the sprocket wheel 65, belts 86, 87, 88, 73 and shipping mechanism for the belts 87 and 88, substantially as described 17th. In a machine of the character described, the arms U, T, mounted on the shaft R, the shipping-bar 90 provided with the cam T, the rocking shaft 91 provided with the arms 92, 96 and 99, the bar 97 pivoted to the arm 96 and provided with the stud 98, the pivoted lever 103 provided with the studs 105, the bar 94 pivoted to the bar 90 and arms 92, and the bar 101 pivoted to the arm 99, and lever 103 for automatically shipping the belts 87 and 88, substantially as set forth.

No. 28,182. Veterinary Table.

(*Table de vétérinaire.*)

Lansing C. Tiffany, Jacksonville, Ill., U.S., 15th December, 1887; 5 years.

Claim.—1st. The combination of the rectangular frame A, with the tilting table I pivoted near its centre, to the inner corner of said frame, and mechanism for operating said table, substantially as described. 2nd. The combination of the frame A, a tilting table or frame I hinged thereto, the roller C having the ropes coiled thereon, the ends of said ropes extending from the roller in opposite directions and attached to opposite sides of the tilting table, and means for rotating the roller C to tilt the table, substantially as described. 3rd. The combination of the frame A, having the rollers B, C and D, the spur-wheels E, secured to the ends of the roller C, and the crank-shafts G, having the spur pinions F meshing with the wheels E, a tilting table or frame I hinged near its centre to the upper front corner of the frame A, and the coiled ropes on the roller C, having their ends passed under the rollers B and D and attached to the opposite edges of the tilting table, for the purpose set forth, substantially as described. 4th. The combination of the frame A, the table I hinged to said frame, means for tilting said table, and the laterally movable platform, for the purpose set forth substantially as described. 5th. The combination of the rectangular frame A, with the tilting table I, pivoted near its centre to the inner corner of said frame mechanism for operating said table, the laterally movable platform O and an independent harness adapted for attachment to, and detachment from said table, substantially as described. 6th. The combination, with the tilting veterinary table, as described, and suitable operating mechanism therefor, of a harness independent thereof and provided with means for attaching and detaching the same to and from said table or mechanism, substantially as described. 7th. The combination, with the tilting veterinary table and operating mechanism therefor, of an independent harness provided with girths having extending ends for attaching to and detaching from said table or mechanism, substantially as described.

No. 28,183. Frame for Dynamo-Electric Machines. (*Bâti pour machines dynamo-électriques.*)

James W. Easton, Reading Penn., U.S., 15th December, 1887; 5 years.

Claim.—1st. In an electric machine, the combination, with the field magnet cores, of a cast iron end plate and wrought iron plates connecting the cores, and in magnetic contact with the end plates, substantially as described. 2nd. In a dynamo-electric generator, an end plate or frame partly of cast iron and partly of wrought iron, substantially as described. 3rd. In an electric generator, an end plate of cast iron, and wrought iron bars sunk into the cast iron and connecting the cores, substantially as described.

No. 28,184. Railway Tie.

(*Traverse de chemin de fer.*)

William P. Hall and Charles C. Barnett, Piqua, Ohio, U.S., 15th December, 1887; 5 years.

Claim.—1st. A railroad tie formed of a single sheet of metal having contracted bracing ends and shouldered abutments, the top of the tie between the shoulders being flat and the sides and ends convex or arched laterally, substantially as described. 2nd. The combination, with the shouldered tie, of a clamp or chair embracing the edges of the tie and provided with fingers for engaging the rail flanges, substantially as described. 3rd. The tie having contracted shouldered ends and recessed flanges of a clamp or chair surrounding the tie and resting in the recesses in the flanges, and provided with fingers to grasp the rail flange, substantially as described. 4th. A railroad tie of arched form transversely at each end, and having shoulders and outwardly inclined crowns beyond the shoulders, in combination with the flattened crown extending from one of said shoulders to the other, substantially as and for the purpose. 5th. The combination, with a tie having edge flanges, of a clamp or chair grasping the said flanges and provided with fingers to grasp the rail flanges, substantially as described. 6th. A railroad tie constructed of a single sheet of metal pressed into shape and having formed upon its ends, shoulders struck up from the crown of the tie, and contracted bracing portions extending from the said shoulders to the respective ends of the tie, in combination with the rail clamps embracing the tie and abutting against the said shoulders, substantially as herein set forth.

No. 28,185. Adjustable Wood-Measuring Rack. (*Appareil à extension pour mesurer le bois.*)

Horace L. Broughton, Marblehead, Mass., U.S., 17th December, 1887, 5 years.

Claim.—1st. A wood-measuring frame comprising a sill frame A, B, C, fixed posts D, E, thereon, pins as F on the sill-frame, and a movable end frame G, H, A on the sill-frame and provided with catches adapted to engage the sill-frame pins F, substantially as shown and described. 2nd. The combination, in a wood-measuring frame, of a sill-frame A, B, C, pins F on the sill-frame, fixed posts D, E, a movable frame comprising posts G, H, and hook plates I, J, on said posts, and braces K held at one end to the posts G, H, and adapted to engage the pins F, substantially as shown and described. 3rd. In a wood-measuring frame, the combination, with the sill-frame thereof, provided with pins F, and a movable end frame comprising posts G, H, of hook-plates I, J, and braces K on the posts, and adapted to engage the pins F and said hook-plates, and braces slotted at s_1, s_2, respectively, for the passage of fastening-screws s_3, L, substantially as described for the purposes set forth. 4th. In a wood-measuring frame, the braces K, for the movable end frame, made with a concavity k at the lower end, and with two arms k_1, k_2, having slots l for the passage of attaching-screws, substantially as shown and described. 5th. A wood-measuring frame comprising a sill-frame, a fixed end frame as D, E, and a movable end frame as G, H, on the sill-frame, and the post E of the fixed end frame, provided with scale marks as 1, 2, 3, substantially as described for the purposes set forth.

No. 28,186. Rein-holder. (*Accroche-guides.*)

John C. Henry, Beverley, N.J., U.S., 17th December, 1887, 5 years.

Claim.—As an improved article of manufacture, a rein-holder composed of a base-plate having integral parallel flanges, a lever fulcrumed between said flanges, and a plate-spring rear fastened and supporting at the front the tail end of said lever, as shown and described.

No. 28,187. Suspender Buckle.

(*Boucle de bretelle.*)

William J. Walters, Prospect, N. Y., U. S., 17th December, 1887, 5 years.

Claim.—1st. A buckle consisting of a frame provided with a fixed

cross-bar and a clamp sliding on the side bars of the frame, and projecting down in front of the cross-bar, substantially as shown and described. 2nd. A buckle consisting of a frame provided with a cross-bar and an apertured bottom bar, and a clamp sliding on the side bars of the frame, and projecting downward in front of the cross-bar and passing through the aperture in the bottom bar of the said frame, substantially as shown and described. 3rd. The combination, with a buckle-frame, of cross-bar secured to the side bars of the said frame, and a clamp adapted to slide on the said side-bars of the frame and extending in front of the said cross-bar, and passing through the apertured bottom-bar of the frame, said clamp being provided with a hook in its lower end, substantially as shown and described. 4th. The combination, with the suspender buckle A provided with the side bars B_1, the top bar B_3 and the apertured bottom bar B_2, of the cross-bar C secured to said side bars B_1, the clamp D having the ends D_1 adapted to slide on the said side bars B_1, said clamp being also provided with the bars D_2, passing over the cross-bar C and adapted to press the web of the suspender against the said cross-bars, said clamp being also provided with a straight piece D_3 passing through the aperture in the bottom bar B_2, and a hook or loop formed at the lower end of said clamp to receive the suspender straps, substantially as shown and described.

No. 28,188. Hot Air Furnace. (*Calorifère à air.*)

Isaac D. Smead, Toledo, Ohio, U.S., 17th December, 1887, 5 years.

Claim.—1st A furnace body, composed of a fire-box D, and the two combustion chambers E directly in rear of the fire box, at the opposite sides thereof, with a vertical opening or space for the passage of air between said chambers E, substantially as and for the purpose set forth. 2nd. The combination, in a furnace, of the fire-box D, the rear extended chambers E, E, the return flues H, H and the front chamber F, all constructed and arranged to operate substantially as and for the purpose set forth. 3rd. The combination, in a furnace, of a fire-box, and one or more return flues H, connected to the rear part of the furnace body in such a manner as to receive the products of combustion and convey them back to the front end, said flue or flues having their side walls made essentially vertical with the narrow space along their lower edge, substantially as and for the purpose set forth. 4th. The combination, in a furnace, of the elongated body, the two return flues H at opposite sides, connected to the body at its rear end the chamber F at the front and the smoke pipe I connected to said chamber and extending from thence backward between said return flues on a line even with or below the top of the same, substantially as and for the purpose set forth. 5th. The combination, in a furnace, of the elongated body, the return flues H, chamber F and smoke pipe I, said smoke pipe being connected to the body by a direct draft flue J, located at some distance from the front, with a damper K for opening or closing the same, said parts being arranged to operate substantially as described. 6th I claim the detachable door frame R, provided with an inwardly projecting flange, to cover the joint between the front end of the fire box and the front plate of the furnace, as set forth. 7th. The detachable door frame R, having a roller o journalled in its lower part, substantially as and for the purpose set forth. 8th. I claim also the longitudinal heat flue H, having its sides made vertically or essentially so, and its lower edge of V-shape, or practically so, whereby the soot and ashes are made to accumulate at the lower narrow edge only, substantially as set forth.

No. 28,189. Cupola. (*Fourneau à cupole.*)

Friederick A. Herbortz, Cologne-on-Rhine, Germany, 17th December, 1887; 5 years.

Claim.—1st A cupola or furnace, composed of a stationary shaft and adjustable hearth having an adjustable blast orifice between their meeting edges, an exhaust pipe with stem jet at the upper part of the shaft, the upper part of the shaft surrounded by an air heating box communicating by passages with the lower part of melting zone of the shaft, substantially as set forth. 2nd. The combination of the shaft S, pillars P, hearth H with lifting gear exhaust E, *e*, jet J, heater B and passages T, substantially as set forth. 3rd. The combination, in a cupola, of the shaft S plate *s*, pillars P, hearth H, brackets *h*, nuts h_1, screws H_1 and wheels h_{11}, h_{111} and H_{111}, substantially as set forth. 4th. The combination, in a cupola, of the stationary shaft S, pillars P and adjustable hearth H, provided with suitable lifting gear. 5th. The combination, in cupola, of the shaft S, exhaust E, *e*, jet J, heating-box B, nozzles *b*, tubes T and nozzles *t*, substantially as set forth. 6th. The combination, in a cupola, of the shaft *s*, exhaust E, *e*, jet J, box B, nozzles *b*, passage T_1 and covers t_1, substantially as set forth.

No 28,190. Electric Belt. (*Ceinture électrique.*)

Alva Owen, Chicago, Ill., U.S., 17th December, 1887; 5 years.

Claim—1st. In an electric belt, the combination of the conductor cord C_1, the spring clamp H, having the coil *h* and crossed and open-ended parts h_1, h_1, with the battery-wire b_3, which rests between said parts, and with the adjoining battery cells B, constructed as described, the end cells having wires b_5, substantially as set forth 2nd. The combination of the battery, the inner case D having eyes *d*, the adjustable outer case F, having hooks *f*, and the belt G, as described. 3rd. The case D, having the battery eyes b_5 projecting from the respective ends of the case, and also an eye *d* at each end, with the outer case F, having hooks *f*, and with the belt G, substantially as described. 4th. In an electric belt, the electrodes having clips upon the upper and lower sides with ends pointing toward each other, whereby said clips are adjustable upon and at any point along, and readily detachable at any point from the belt. 5th. The combination of the divided conductor cord C_2 with the battery, and the electrodes having clips, and thereby attachable at any point, and adjustable upon, and along, and detachable from, the belt, whereby the current can be localized at any point along the belt at will. 6th. The battery A, composed of the cells B, each end having an eye which it can be connected to the electrode, combined with case F having hooks *f*, and the belt, as described, whereby the battery can be adjusted longitudinally along the belt and reversed thereupon, substantially as described. 7th. In a galvanic belt, the battery composed of cells, each of which is made of a piece of flat copper on the inside, folded double felt wrapped around the copper zinc folded upon the outside, and copper wire soldered on the inside of the zinc, whereby it can be attached to the next cell, substantially as described.

No. 28,191. Machine for Sawing Barrel Hoops (*Machine à scier le feuillard de bois.*)

John C. Ballew, Evansville, Ind., U.S., 17th December, 1887, 5 years.

Claim—1st. In combination with a frame A, wheels F, G and a band saw H, a post or standard M adapted to support the upper wheel G, a screw M^4 journalled in the frame A, a nut M_3 mounted upon the screw-stem, and a weighted lever O fulcrumed on said block and serving to support the standard M, all substantially as shewn. 2nd. In combination with a frame A, wheels F, G, and a band saw H, a post or standard M adapted to support the upper wheel G and provided with a web or flange M^3, a screw stem M_1, journalled in the frame A and provided at its lower end with a bevel pinion *f*, a shaft P mounted in frame A and provided with bevel pinion *g* and hand wheel P_1, a nut M_4 mounted upon the screw stem M_1, and a lever O fulcrumed upon the nut M_2, and provided at one end with a weight N, and at the other end with a roller M^4, all substantially as shown 3rd. In combination with a main frame A, having a wheel F, a post or standard M mounted in frame A and provided with boxes or bearings *d*, a frame or bearing L provided with lateral journals *c*, set screws Q, Q, carried by post M and bearing against the frame L, on opposite sides of its journals, and a shaft K journalled in frame L and provided with a wheel G. 4th. In a machine of the class described, the combination, with a frame-work, of a saw-blade, as H, a pivoted frame W, a vertical roller U carried by the latter directly opposite the face of the saw blade, and a saw guide Z also carried by the frame W in line with the axis of the roller. 5th. In a sawing machine, the combination, with a saw, as H, of horizontal rollers T, T, a pivoted frame W, a vertical roller U and saw guide *z* carried by frame W, the roller being arranged directly opposite the face of the saw blade, whereby the latter will be deflected at the proper time. 6th In a sawing machine, the combination, with a saw blade H, of a vertical roller U directly opposite the face of the saw, a frame, as W, for said roller, pivoted to one side of the axis of the roller, and a saw guide *z* also carried by the frame W, all substantially as shown, whereby the roller is caused to swing the frame laterally and deflect the saw at the time that the irregularity that causes the deflection passes the saw-blade. 7th. In a sawing machine, the combination, with a saw-blade, as H, of a vertical roller U directly opposite the face of the saw, a frame W, for said roller pivoted to one side of the axis of the latter, a guide *z* carried by frame W, and a spring connected with said frame and serving to maintain the roller in a normally fixed position. 8th. In combination with frame A and saw H, horizontal pole-supporting rollers T, T, slotted yokes or plates *j*, posts *l* and clamping bolts *k*, whereby the rollers may be raised, lowered and inclined longitudinally as desired. 9th. In combination with frame A and saw H, horizontal rollers T, T, and posts *l* for supporting said rollers, adjustable to and from the saw, and provided with clamping screws or bolts, substantially as shown and described. 10th. In combination with a supporting frame, and with a saw, as H, a frame W pivoted at a point in rear of the saw and adapted to swing horizontally, a sliding yoke V mounted in said frame and provided with a toothed rack *r*, a pinion *s* meshing with said rack, a spindle *t* carrying said pinion and provided with a ratchet-wheel *v*, and a vertical roller carried by the sliding yoke V 11th. In a sawing machine, the combination, with a suitable frame, of a saw mounted therein, slotted arms R and S projecting from the frame, shouldered pintles *q*, *q*, carried by the arms and provided with clamping nuts, a frame, as W, carried by the pintles, and a vertical roller U carried by frame W, all substantially as shown. 12th. The herein described hoop sawing machine, consisting of a supporting frame, a band saw carried on wheels supported thereon, and hoop guiding and supporting devices, consisting of horizontal rollers T, T, horizontally swinging frame W, sliding head or frame V, mounted in said frame W and provided with vertical roller U, springs X and adjusting screws Z, the frame W being pivoted at a point back of the rear edge of the saw, and the several rollers being adjusted toward and from the saw, substantially as explained. 13th. In a hoop-sawing machine, such as described, the combination, with a suitable frame A, and the saw and its driving mechanism, of a frame W, a vertical guide-roller carried in said frame, pintles or gudgeons forming pivots for the frame and provided with threaded stems and nuts, and supporting arms slotted to receive the threaded stems, whereby the pintles may be adjusted to vary the position of frame W and its roller.

No. 28,192. Brick Machine. (*Machine à brique.*)

Jonathan Creager, Cincinnati, Ohio, U. S., 17th December, 1887; 5 years.

Claim.—1st. The combination, in a brick machine, of the vertically-shiftable mould supporting frame C, lifters G, G_1, rock-shaft H, slotted boxes I, I_1, adjustable wedge-block J, *j*, and retaining device K, for the purpose described. 2nd. A brick machine, having a post contiguous to the feed-opening O, divided transversely as at A_1, and united by a bent knee P, which knee serves as a continuation of said opening, for the purpose specified.

No. 28,193. Hinge. (*Penture.*)

Ferdinand L. Scheidemann and Frederick W. Bender, Philadelphia, Penn., U.S., 17th December, 1887; 5 years.

Claim.—1st. The combination of hinge leaves, each provided with guide-ways and links connected pivotally together and to either leaf, and the free ends of said links arranged to run on the guide-ways, substantially as described. 2nd. The combination of hinge leaves, each formed with a pair of guide-ways, links pivoted together and to either leaf, and arranged to travel between the guides on the op-

posite leaf, and friction rollers pivoted to the sides of the free end of each link and adapted to run within the guide-ways, substantially as shown and described.

No. 28,194. Combined Vent and Stopper.

(Bonde et bondon.)

John M. Ayer, Chicago, Ill., U.S., 17th December, 1887; 5 years.

Claim.—1st. A combined vent and stopper, comprising, in combination, a threaded flaring tube C, having longitudinal slots *p*, a threaded stopper D and a venting aperture *n* in the device regulated and controlled by turning the stopper, substantially as described. 2nd A combined vent and stopper, comprising, in combination, a threaded flaring tube C, having longitudinal slots *p*, and a threaded stopper D, having an opening *n* in its side, substantially as described 3rd. The combination of a bung B, having an opening *q*, a threaded flaring tube C within the opening *q*, and having longitudinal slots *p*, a threaded stopper D and a venting aperture in the device, regulated and controlled by turning the stopper, substantially as described. 4th. The combination of a bung B, having an opening *q*, an internally-threaded flaring tube C within the opening *q*, and having longitudinal slots *p*, and an externally threaded hollow stopper D within the tube C, and provided with an opening *n*, substantially as described.

No. 28,195. Belt Fastener. *(Joint de Courroie)*

Almon J. Preston, East Guilford, N.Y., U.S., 17th December, 1887; 5 years.

Claim.—The combination, with the two ends of a belt, of the frame C provided with a slot to receive said ends, and a wedge-shaped key D provided with longitudinal ribs or serrations entering said slot, between the said ends of the belt, and holding the same in place, all arranged substantially as shown and described and for the purpose specified.

No. 28,196. Safety Catch or Locking Device for use upon Cars, Elevator Platforms, Cages, etc. *(Arrêt de sûreté pour chars, ascenseurs, puits, etc.)*

James Dunstan, Central Mine, Mich., U. S., 17th December, 1887; 5 years.

Claim.—1st. In combination with a car or other vehicle, two independent pairs of gripping jaws or dogs, the jaws of each pair being arranged, substantially as shown and described, to bear against opposite faces of the rail or guide over which the vehicle moves. 2nd. In combination with a car or other vehicle, two pairs of gripping jaws or dogs, each pair independently connected with the draft rope or cable, whereby each pair is adapted to independently engage with the supporting or guiding rail upon or over which the vehicle moves, in the event of breaking or sudden slackening of the draft rope or cable. 3rd. In combination with a car or other vehicle, and with supporting or guiding rails therefor, two pairs of arbors E, toothed gearing connecting the arbors of each pair, eccentric dogs carried one by each of said arbors, levers projecting from said arbors, and longitudinally movable rods connecting said levers with the draft rope or cable, all substantially as shown, whereby the rods are permitted to move backward upon sudden slackening or breakage of the draft rope or cable, and in moving back to actuate the jaws and throw them into engagement with the opposite faces of the supporting or guiding rails. 4th. In combination with supporting or guiding rails B, a car or vehicle provided with arbors E, gripping dogs C, secured to said arbors, and arranged to bear against opposite sides of said rails, toothed gearing connecting the arbors of each pair, levers G1 extending radially from one arbor of each pair, longitudinally movable rods connected with said levers, springs bearing against said rods and tending to force the same backward relatively to the direction of movement of the vehicle, and a draft rope or cable independently connected with each of said rods, substantially as set forth 5th. The herein described safety attachment for cars, elevators, etc., consisting of arbors E, dogs C carried by said arbors, toothed gearing F, G, connecting said arbors E, levers G1 extending from the arbors E, and a draft rope or cable connected independently with each of said levers. 6th In combination with guiding or supporting rails, a car car or vehicle provided with arbors E, dogs C secured upon said arbors, gearing F, G, connecting the arbors of each pair levers G1, extending from the arbors E, longitudinally movable rods H connected with said levers, springs L acting upon said rods, and a draft rope or cable independently connected with each of said rods and with the car or vehicle, substantially as shown and described, whereby the rods are drawn and held forward against the pressure of the springs when the draft rope or cable is under tension, but are released and permitted to move back when said tension is relieved, substantially as set forth.

No. 28,197. Manufacture of Twist Augers and other like Boring Tools.

(Fabrication des tarières tordues et autres semblables outils à percer)

Cornelius Whitehouse, Bridgetown Cannock, Eng., 17th December, 1887; 5 years.

Claim.—1st. A closed tip or cutter nose for wrought metal augers and other similar boring tools, that is to say, a tip or cutter nose having closed or connected cutter blades c^5, c^5, partially intersected by holes or passages c^2, c^2, with cutting edges c^6, c^6, substantially as described and set forth, thereby dispensing with spur-like cutter parts called wings. 2nd. A closed tip or cutter nose for wrought metal augers and other similar boring tools, that is to say: a cutter nose or tip (with or without a leading screw point) having closed or bridging cutter blades c^5, c^5, partially intersected by holes c^2, c^2, with cutting edges c^6, c^6, c^7, c^7, substantially as described and set forth. 3rd. A closed boring tool end provided with a single cutter hold, substantially as described and set forth. 4th. Making closed tips or cutter nose parts of the kinds herein described by the process of stamping and by means of dies and tools *d*, *e* with recesses sunken within them, of the counterpart of an end to be fashioned and which said end or tip is produced by the means and combination of processes, as herein described.

No. 28,198. Machine for Stretching Pants and other Garments. *(Machine à étirer les pantalons et autres vêtements.)*

Lucius M. Hall, Montreal, Que., 17th December, 1887; 5 years.

Claim—1st. The combination of the arms or reachers A, A, with the upper jaws B, B and lower jaws C, C, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the lower jaws C, C, with cams E, E, substantially as and for the purpose hereinbefore set forth. 3rd. The combination of the ratchet J with ratchet bar K, substantially as and for the purpose hereinbefore set forth.

No. 28,199. School Furniture. *(Meuble d'école.)*

Ronald Gillis, Sydney, N.S., 17th December, 1887; 5 years.

Claim.—The combination of the pieces *b*, *c* and *d*, substantially as and for the purpose hereinbefore set forth.

No. 28,200. Belt or Strap for Transmitting Motion. *(Courroie sans fin.)*

James H. Adamson, Melbourne, Victoria, James F. Mellor and Benjamin F. Mellor, Adelaide, S. A., 17th December, 1887; 5 years

Claim.—1st. Belts or straps for transmitting motion having projections on their bearing surface, whether such projections be attached to or made integral parts thereof, or be made part of their substance, substantially as herein described and explained. 2nd. The combination, with such belts or straps, of a pulley or pulleys coated with an easily impressible and elastic material, such as india-rubber, in the manner and for the purpose herein described and explained.

No. 28,201. Sight for Fire-arms.

(Mire d'arme à feu.)

Joseph Manton and Charles C. Newton, Montreal, Que., 17th December, 1887; 5 years.

Claim.—1st. In sights for fire-arms, the combination of a bar provided with ordinary sights and marks, also having a dovetailed groove, a block having a dovetailed projection arranged to fit the dovetailed groove of the said bar, the same being so arranged that the said bar may slide transversely upon the said dovetailed projection, uprights b^1, c^1, arranged to form a guide to the said blocks in its vertical movement, the whole substantially as described. 2nd. In sights for fire-arms, the combination of the uprights c^1, c^1, block *d* arranged to slide between and be guided by the said uprights, and provided with a dovetailed projection *f* and flanges e^1, bar *h* provided with dovetailed groove *g*, fitted to slide on the dovetailed projection *f*, the whole substantially as described. 3rd. In sights for fire-arms, the combination of the uprights c^1, c^1, block *d* arranged to slide between the said uprights, and provided with a dovetailed projection *f* and flanges *e*, also having set screw O, with bar *h* having groove *g* arranged to slide upon the projection *f*, the whole substantially as described.

No. 28,202. Automatic Grain Binder.

(Lieuse automatique à grain.)

The Massey Manufacturing Company, Toronto, Ont., (assignee of William N. Whiteley and William Bayley, Springfield, Ohio, U. S.), 17th November, 1887; 5 years.

Claim.—1st. A sprocket or chain wheel mounted loosely upon the upper arm of the binder-frame, combined with a similar sprocket-wheel mounted on the frame near the head of the elevator, driven as described, and a carrying chain around said wheels to turn the heads of the grain down the binder-table, for the purpose of facilitating the discharge of the bound bundles. 2nd. A sprocket or chain wheel mounted loosely upon the upper arm of the binder-frame, a similar sprocket-wheel mounted on the frame near the head of the elevator, driven as described, a carrying-chain around said wheels combined with fingers jointed to said chain, and a controlling track to hold said fingers in proper action, whereby the heads of the grain are moved downward over the deck of the binder, to facilitate the discharge of the bound bundles.

No. 28,203. Car-Coupling. *(Attelage de chars)*

James Scott, Brockville, Ont., 19th December, 1887, 5 years.

Claim.—1st. The combination of the draw-head A, pivot B, lever C, stop C^2, pins C^1, C^3 and e^3, notch e, link I, lever D, pivot D^1, hub D^2, latch E, pivot E^1, cord e, weight E^2, guide A^1, finger G, shaft H, cams F and weights F^2. 2nd. The combination of the structure C, D, E, capable of being locked and pivoted within the draw-head. 3rd. The combination of the lever C, stop C^2, link I, and pin C^3. 4th. The combination of the lever D, latch E, pivot E^1, and weight E^2. 5th. The combination of the lever C, lever D, latch E, stop C^2, and finger G. 6th. The combination of the draw-head A, pivot B, lever C, and link I. 7th. The combination of the lever D, shaft F, cams F^1, and finger G. 8th. The combination of the levers C and D, pin c^1, notch *e*, finger G, and link I. 9th. The combination of the levers C and D, latch E, stop C^2, link I, pin C^3, and finger G, all substantially as shown and for the purpose set forth.

No. 28,204. Kiln for Burning Brick.

(Four à briques.)

Franz Blenmirger, Toronto, Ont., 19th December, 1887, 5 years.

Claim—1st. The union of the chambers A, B, C, D, in one kiln,

and the connecting flues *h, k, k, k*, provided with adjustable dampers, substantially as and for the purpose hereinbefore set forth. 2nd The regulating wall *d*, substantially as and for the purpose hereinbefore set forth. 3rd. The openings *i, i*, in the vault, substantially as and for the purpose hereinbefore set forth.

No. 28,205. Steam Injector. (*Injecteur de vapeur.*)

The Penberthy Injector Company, (assignee of John Desmond,) Detroit, Mich., U.S., 19th December, 1887; 5 years.

Claim.—1st. The combination, with the casing having the overflow chamber, the apertured lantern-shaped lifting tube and the combining and delivery tubes of the ring or collar fitted to slide on said lifting-tube and having an inclined circular shoulder on its inner surface, substantially as shown and described. 2nd. The combination, with the combining and delivery tubes, of the lifting-tube provided with the lantern-shaped portion, and the ring or band sliding on said lifting-tube, substantially as shown and described. 3rd. The combination, with the lifting-tube of the ring or band having an inclined circular shoulder on its inner surface, substantially as shown and for the purpose described. 4th. The combination, with the delivery and combining tubes, the latter having opposite lateral passages and the lifting-tubes, of the sliding ring or band, substantially as shown and described. 5th. The overflow valve consisting of the disk having a sleeve or extension, and the pivoted arm secured thereon, substantially as shown and described. 6th. The combination, with the casing having a curved lateral arm, of the pivoted arm, and the disk having an internally-threaded extension fitted in the free end of said arm, substantially as shown and described. 7th. The combination, with the casing having its outer wall inclined around the overflow-opening and the lateral arm, of the overflow-valve pivoted in said arm and occupying the described relative position to said opening, substantially as shown and described. 8th The herein-described injector comprising the casing, the water-supply and overflow chambers, the lifting, combining and delivery tubes, the sliding ring or band, the curved lateral arm and the overflow-valve consisting of the pivoted arm and the disk having an extension secured by said arm, substantially as shown and described.

No. 28,206. Blank for Shovels, Spades, etc. (*Ebauche pour pelles, bèches, etc.*)

The D. F Jones Manufacturing Company, Gananoque, Ont., (assignee of Edward L. Keeler, Beaver Falls, Penn., U.S., 19th December, 1887; 5 years.

Claim.—1st In the manufacture of shovels, spades, etc., the cutting of blanks from a bar or plate of steel or iron, rolled to the requisite thickness and having ribs, or extra thicknesses of metal formed on the upper and lower sides thereof, cutting from this bar or plate a split or slot which, when the plate is rolled out and finished, forms a socket to receive the handle, the ribs or extra thicknesses of metal being elongated under the process of rolling so as to form straps, whereby the handle is fastened to the shovel or other article manufactured, substantially as specified. 2nd. In the manufacture of spades, etc., the cutting of blanks from a bar or plate of rolled metal A, having ribs or extra thicknesses of metal B formed thereon, substantially as described and for the purpose specified. 3rd In a blank cut from a plate or bar of rolled metal to form a spade or shovel, etc, the formation previous to final rolling and finishing of double thicknesses of metal, or ribs B and slats C, substantially as described and for the purpose specified. 4th. The formation of a slot C in the blank, after being cut, from the bar or plate, and previous to the final rolling and finishing, substantially as described and for the purpose specified. 5th. In a blank cut from a plate to form a single spade or shovel previous to rolling the formation of the ribs or extra thicknesses of metal D, with bevelled faces F and slot C, substantially as specified. 6th. In a blank adapted to be rolled and finished so as to form a spade, shovel, etc., a rib or extra thickness of metal and a slot or split formed in the side of said blank and adjoining said rib, substantially as specified. 7th. In the formation of two spades or shovels from one blank having ribs B and two slots C formed one at each end adjoining said ribs, the partial rolling of said blank so as to form straps and sockets, the cutting of the blank in two and rolling and finishing of the parts so severed to form two spades, shovels, etc., substantially as specified.

No. 28,207. Truss. (*Bandage herniaire.*)

Thomas Simmons, Hartford, Conn., U. S, 20th December, 1887, 5 years.

Claim.—1st. In a truss, the combination, with the plate C and the pad carried thereby, of the bracket *b* secured to said plate, the pawl *d*, the coupling-section G and the ratchet-wheel formed integral with said section journalled in said bracket and engaging said pawl, substantially as described. 2nd. In a truss, the combination, with the metal band I, of the metal spring K secured at one end to said band and slotted at its other end, and the set screws *s* passed through the slot of the spring and through the band I, substantially as shown and described and for the purpose specified.

No. 28,208. Process of Obtaining Alloys of Aluminium with certain other Metals. (*Procédé de production des alliages d'aluminium avec certains autres métaux.*)

John Clark, Birmingham, Eng, 20th December, 1887: 5 years.

Claim.—1st. The herein-described process of treating alumina and the fluoxide of aluminium derived from any source, with nitro-hydrochloric acid or with hydrochloric acid in the liquid or gaseous state, so as to obtain a hydrated chloride of aluminium, as the preparatory or first stage of the herein-described process of alloying aluminium with another metal or metals, as herein specified. 2nd. The process of alloying aluminium with another metal or metals, which consists in treating hydrated chloride of aluminium with re-agents which will combine with the chlorine and form volatilizable chlorides, and then bringing the prepared aluminium powder into intimate contact with the metal or metallic alloy and submitting the whole to a roasted or melting heat, whereby the volatile chlorides will be driven off and the reduced aluminium will be alloyed at one direct operation with the metal or alloy, as herein specified. 3rd. In the herein-described process of alloying aluminium with another metal or metals, or alloy, the employment, as reducing agents for the hydrated chloride of aluminium used, of lime, zinc, iron and ammonia, or the carbonate or bicarbonate of ammonia, soda or potash, separately or mixed together, as herein specified. 4th. The obtaining alloys of aluminium with another metal or metals without reducing aluminium to the metallic state by a separate and previous operation, thereby effecting greater economy in the production of such alloys of aluminium than heretofore obtained.

No. 28,209. Process of Making Smooth Surfaces on Stone, Metal, etc. (*Manière de faire des surfaces polies sur la pierre, le métal, etc*)

James S. McCoy, Brooklyn, N. Y., U. S., 20th December, 1887; 5 years.

Claim.—1st. The method of making a smooth surface on stone, metal or other hard substance, by means of reciprocating-stroke machine whose action is so rapid as to be practically continuous. 2nd. The method of making a smooth surface on stone, metal, or other hard substance, by applying to the material by the hand or otherwise, a bit in a spindle acted upon by a spring, and a reciprocating striker which moves with great rapidity in a state of flotation in compressed air, in an air cylinder formed by an appreciable difference in the diameter of the metallic cylinder and the striker. 3rd. The method herein described of making a smooth surface on stone, metal, or other hard substance, which consists in applying to the material by the hand or otherwise, a bit in a spindle acted upon by a spring and a rapidly reciprocating striker, whereby a planed surface is produced upon the material, substantially as described. 4th. The method herein described of making a smooth surface on stone, metal, or other hard substance, which consists in applying in the material by the hand, or otherwise, a bit in a spindle acted upon by a spring and a rapidly reciprocating striker, the force of the spring being so adjustdd and the striker being driven so rapidly that a practically continuous progressive motion of the cutting bit is imparted, whereby a planed surface is produced upon the material, substantially as described.

No. 28,210. Car-Coupler. (*Attelage de chars.*)

George C. McKitterick, Thomas R. Morgans and John J. McKitterick, Jackson, Ohio, 20th December, 1887, 5 years.

Claim.—1st. The combination, with a draw-head, of a loosely-inserted coupling-dog recessed on its lower edge to form two points which rest on the lower inner face of the coupling head, substantially as described. 2nd. The combination, with a draw-head formed with a link chamber partially surrounded by a recess 12, and provided with a slot 13 and projection 14 having forwardly inclined faces 7, of a coupling dog having a hook 21, having a convex outer and a concave inner face, lugs 5 being formed on the dog above and to the rear of the hook, substantially as described. 3rd. The combination, with a draw-head having a recess 12 that partially surrounds the link chamber, and a slot 13 communicating with said link chamber, of a coupling dog formed with lugs 17 and 5, shoulder 4 and a hook 21, substantially as described. 4th. The combination, with a draw-head formed with an extension 14 having inclined faces 7, a recess 12 partially surrounding the link chamber, a slot 13 communicating with the link chamber, the recess 12 being wider than the slot 13, of a coupling dog formed with a hook 21 and lugs 17, and the coupling dog being arranged for connection with a chain that extends to an operating mechanism, substantially as described.

No. 28,211. Oil Pump. (*Pompe à huile.*)

Charles Hirsch, Buffalo, N.Y., U.S., 20th December, 1887, 5 years,

Claim.—1st. The combination, with the oil-reservoir A and pump-cylinder B, of the chamber *g* arranged below the pump-cylinder and communicating with the pump-cylinder and the oil-chamber, a plug or stem inserted from the bottom of the oil-reservoir and forming a valve seat in the chamber *g*, and a valve *j* arranged in the chamber *g* and closing the communication between the oil-reservoir and the pump-cylinder, substantially as set forth. 2nd. The combination, with the oil-reservoir A and pump-cylinder B, of the chamber *g*, arranged below the pump-cylinder and communicating therewith by a passage *g*¹, a stem H, arranged below the chamber *g*, and provided with the oil passages *i, i*¹, forming a communication between the chamber *g* and the bottom of the oil-reservoir, and a valve *j* arranged in the chamber *g*, substantially as set forth. 3rd. The combination, with the oil-reservoir A and pump-cylinder B, of the chamber *g*, formed on the underside of the pump-cylinder and communicating therewith by a passage *g*¹, a stem H, arranged below the chamber *g* and provided with oil-passages *i, i*¹, forming a communication between the chamber *g* and reservoir A, a valve *j* arranged in the chamber *g*, and a shank K opening into the end of the pump-cylinder and provided with a valve *l*, substantially as set forth.

No. 28,212, Means and Apparatus for the Separation of Gold and other Metals from their Ores. (*Mode et appareil de séparation de l'or et autres métaux de leurs minerais.*)

George J. Atkins, Tottenham, Eng., 20th Dember, 1887; 5 years.

Claim.—1st. The new or improved means for separating gold and other metals from their ores, which consists in passing such ores continuously through an electrolytic apparatus, connected or not with an amalgamating apparatus, substantially as hereinbefore described.

2nd. The apparatus for separating gold and other metals from their ores consisting of an electrolytic apparatus, through which the ore is passed continuously, and in which some of the metals are extracted, in combination with an amalgamating apparatus in which are collected the metal is is desired to recover, which are not retained in the electrolytic apparatus, and from which amalgamating apparatus the gangue is passed away continuously, substantially as hereinbefore described and illustrated in the drawings hereto annexed. 3rd. The electrolytic apparatus so constructed and arranged that the ore may be passed continuously through the same, the metals wholly or partly extracted therein and the gangue withdrawn continuously therefrom, substantially as hereinbefore described and illustrated in the drawings hereto annexed. 4th. In electrolytic apparatus for separating gold and other metals from their ores, the use of a retarding device, such as the screw D for example, of conductive material, for retarding the continuous passage of the ore through an anode compartment, such retarding device constituting an insoluble part of the anode pole while the ore constitutes, during its continuous passage through the apparatus, a soluble part of such anode pole, substantially as hereinbefore described and illustrated in the drawings hereto annexed. 5th. In electrolytic apparatus for separating gold and other metals from their ores, the use of a retarding device, such as the screw D for example, of non-conducting material for retarding the continuous passage of the ore through an anode compartment having a lining wholly or partly of conductive material, such lining constituting an insoluble part of the anode pole, while the ore constitutes, during its continuous passage through the apparatus, a soluble part of such anode pole, substantially as hereinbefore described. 6th. Electrolytic apparatus for separating gold and other metals, in which a column of solution forming the electrolyte, combined with gangue and contained in the said electrolytic apparatus, is balanced by a column of mercury in an amalgamating apparatus, or by a column of solution external to the electrolytic compartments, the ore being caused to fall continuously by the action of gravity, with or without retarding devices, through the electrolytic apparatus, and the ore or gangue withdrawn continuously therefrom through the column of mercury in the amalgamating apparatus, or through the column of solution external to the electrolytic compartments, substantially as hereinbefore described and partly illustrated in the drawing hereto annexed 7th. The electrolytic apparatus consisting of a chamber divided by a partition, for the purpose of retaining the ore at the anode side of the chamber, while allowing of the free passage or circulation of the solution through the same, the anode compartment of such chamber being provided with an outlet at the bottom through which the ore or gangue can be removed continuously, and with or without ore-retarding apparatus, and the cathode compartment of such chamber provided with a rotating cathode and flexible scrapers, and with an outlet at the bottom, through which the deposit removed from the cathode and falling to the bottom of the cathode compartment can be removed continuously or intermittently, the whole constructed, combined and operating substantially as hereinbefore described and illustrated in the drawings hereto annexed. 8th. The amalgamating or separating apparatus consisting of a cylinder containing mercury, and having an inlet at one side and an outlet at the other, with a drum rotating in the said cylinder between the said inlet and outlet, the whole arranged, combined and operating substantially as hereinbefore described and illustrated in the drawings hereto annexed. 9th. Amalgamating or separating apparatus for separating gold and other metals from their ores, or accompanying sand or gangue, in which a column of mercury contained in the amalgamating or separating apparatus supportsor balances the ore, sand or gangue containing the metal, and the water or solution mixed therewith, which are intended to be passed through the said amalgamating or separating apparatus, substantially as hereinbefore described. 10th. The devices for regulating the head of mercury, in the amalgamating apparatus, and thereby the quantity of ore delivered thereto, constructed and operating substantially as hereinbefore described and illustrated in the drawings hereto annexed. 11th. The apparatus for softening and breaking up the mass of gangue issuing from the outlet of the amalgamator, constructed and operating substantially as hereinbefore described and illustrated in the drawings hereto annexed.

No. 28,213. Slat Weaving Machine.

(*Machine à tisser la latte.*)

Isaac A. Kerr, Muscatine, Iowa, U.S., 20th December, 1887; 5 years

Claim.—1st. The combination, with the bed, the heddle-bars and the lay of a slat-weaving machine, of spring presser-bars extended over the bed in position to compress separately each run of the warp, and to hold in place the slats while they are being woven together, and means for regulating the tension of the bars upon the warp and slats, substantially as and for the purposes described. 2nd A slat weaving machine provided with a bed having its upper surface curved longitudinally and transversely, whereby the machine is adapted for weaving curved webbing, substantially as and for the purposes described. 3rd. In a slat-weaving machine, the combination, with the presser-bars F, F, the heddle-bars D, D1 and the lay C, of the curved bed B and the means, herein set forth, for adjusting the bed, as and for the purposes described. 4th. The combination, with the double sets of heddle-bars D, D1, arranged to reciprocate vertically, the yokes b^4, b^5, and the cams c, c^1, mounted in reverse positions within the yokes upon revolving shafts, of the lay C provided with the reeds a and arranged to be reciprocated horizontally, the yoke a^1, the cam b and the connecting actuating devices, whereby the heddle bars and the lay have imparted to them the relative movements, substantially as and for the purposes described. 5th. The combination, with the weaving devices of a slat-weaving machine, as herein set forth, of devices adapted to trim and prepare, for the purposes designed, the ends of the slats, substantially as described.

No. 28,214. Ventilated Barrel, Case, etc.

(*Baril, boite, etc, aérés.*)

Isaac A. Kerr, Muscatine, Iowa, U.S., 20th December, 1887, 5 years.

Claim.—1st. A bulged barrel, having its sides constructed of straight parallel-edged staves or slats A, convexed longitudinally and secured by the woven wires *a* in position to form between the slats the openings *b*, enlarged from the ends to the middle of the barrel, substantially as and for the purposes described. 2nd. A bulged barrel, having its sides constructed of straight parallel-edged slats A, convexed longitudinally and secured by the wires *a* in position to form between the slats the openings *b*, enlarged from their ends to the middle of the barrel, and having the air-tight heads C secured in place, substantially as and for the purposes described. 3rd. The combination, with a bulged barrel having its sides constructed of straight parallel-edged staves or slats, convexed longitudinally and secured by woven wires in position to form between the slats ventilating openings, enlarged from the ends to the middle of the barrel, of an inner pervious lining adapted to admit ventilation through the openings, substantially as and for the purposes described.

No. 28,215. Car Axle Box. (*Boîte à graisse.*)

William P. Wylly, Patterson, Ga., U. S., 20th December, 1887, 5 years.

Claim.—1st. A car axle box, having a suitable brass or bearing for the axle, a sliding top or cover having a depending flange, wedge-shaped grooves or ways in the inner faces of the box, and a wedge-shaped spring or block fitting within said ways and in contact with said flange, as and for the purpose set forth. 2nd. A car axle-box, having vertical wedge-shaped grooves or ways, an axle brass or bearings, a sliding top or cover, having at its front end a depending flange provided with side wings, between which the axle bearing rests, and a vertically slidable wedge-shaped spring or block having bearings within said grooves or ways and against outer face of the depending flange on said cover rests, and which serves as an auxiliary in resisting the thrust of the axle. 3rd. The combination, in a car axle box, of a box having a slot or opening in its top, and a sliding cover having an upwardly-extending flange or shoulder fitting within said opening, to resist the thrust of the axle, substantially as set forth. 4th. The combination, in a car-axle box, of a box having a slot or opening in its top, and wedge-shaped vertical grooves or ribs on its inner side faces, an axle brass or bearing, a sliding lid having an upwardly-extending shoulder adapted to fit within the opening in the box top, a depending flange having side-strengthening wings at its front end, and a wedge-shaped block or springs fitting within the grooves or ways in the sides of the box, and being held thereby in frictional contact with the outer face of the depending flange, substantially as and for the purpose set forth. 5th. In a car axle box, a sliding top having a depending flange side-strengthening wings, and a strengthening fillet or bead on the inner upper side of said flange, and an axle-bearing fitting between said wings and against said flange-strengthening fillet or bead, substantially as set forth. 6th. In a car axle box, a shell or case having a top opening, having straight, or nearly straight front edges, and angular or bevel-shaped rear edges, and a sliding top having an upwardly-extending flange or shoulder, having front and rear edges corresponding in shape with the front and rear edges surrounding the opening in the box, for the purpose of securing a snug fit between those parts, prevent the entrance of dust through said opening and resisting the thrust of the axle, and a sliding door, having at its upper end an inwardly extending flange or lip, which overlaps the box and is of equal, or substantially equal, width to the width of the door, for the purpose of excluding the entrance of dust and air to the box through the door opening the end of the box, substantially as set forth. 7th. In a car axle box, the combination, with a shell or casing having an opening in its top, of a movable top or slide, having its top face an upwardly extending shoulder or flange to fit within said opening, a depending lip or flange at its forward end, a rounded bearing surface on its under and front face, to receive the axle brass and depending side-wings, and an axle brass or bearing having a rounded top front edge to fit the rounded bearing surface of the slide, substantially as set forth. 8th. In a car axle box, a shell or case having a top opening, having straight, or nearly straight, front edges, and angular or bevel-shaped rear edges, and a sliding top, having an upwardly-extending flange or shoulder, having front and rear edges corresponding in shape with the front and rear edges surrounding the opening in the top of the shell, for the purpose of securing a snug fit between those parts, preventing the entrance of dust within the shell and resisting the thrust of the axle, substantially as set forth.

No. 28,216. Boiler for the Economical Generation of Steam. (*Chaudière pour la production économique de la vapeur.*)

Herbert Boyd, Rawal Pindee, India, 20th December, 1887, 5 years.

Claim.—1st. A steam generator, constructed with two outer walls of metal, one within the other, with a body of non-conducting material interposed between said walls, and with a combustion chamber entirely within said steam generator, so as to be surrounded by steam and water space on all sides, substantially as and for the purpose set forth. 2nd. The combination in a steam generator, of a boiler constructed with two outer walls of metal, one within the other, a body of non-conducting material interposed between said walls, and a combustion chamber entirely within said boiler surrounded by a wall of metal, whereby steam and water space is formed all around said chamber between the wall thereof and the inner metallic wall of said boiler, with conducting tubes whereby air and fuel are introduced into said chamber, means for feeding fuel and air into said chamber, substantially as specified, and tubes whereby the products of combustion are conducted from said chamber and discharged into the lower part of the water in said water space, substantially as and for the purpose set forth. 3rd. The combination, in a steam generator, of a boiler constructed with two outer walls, one within the other, with a body of non-conducting material interposed between said walls, and a combustion chamber entirely within said boiler, surrounded on all sides by steam and water space, with a coil of wire within said combustion chamber, capable of being heated to incandescence by well-known electric appliances to burn fuel in said chamber, substantially as and for the purpose set forth. 4th. The combination, in a steam generator, of a boiler constructed with two

outer walls of metal, one within the other, a body of non-conducting material interposed between said valves, and a combustion chamber entirely within said boiler, surrounded on all sides by steam and water space, with conducting tubes to convey fuel into said chamber, means for supplying said fuel, substantially as specified and a governor to control said supply of fuel, comprising two conical wheels, rolling one upon the other, a lever controlling the motion of said wheels, a piston and piston rod moving said lever, and a cylinder in which said piston is actuated by the pressure of steam from said boiler, substantially as and for the purpose set forth. 5th. The combination, in a steam generator, of a boiler constructed with two outer walls of metal, one within the other, a body of non-conducting material interposed between said walls, and a combustion chamber entirely within said boiler, surrounded on all sides by steam and water space, with conducting tubes to convey air and fuel into said chamber, means for feeding fuel and air into said chamber, substantially as specified, tubes to convey the products of combustion from said chamber into the lower part of the water in said water space, a coil of wire within said chamber, capable of being heated to incandescence by well-known electric appliances, for burning fuel in said chamber, and a governor to control the supply of fuel in said chamber, comprising two conical wheels, rolling one upon the other, a lever controlling the motion of said wheels, a piston and piston rod moving said lever, and a cylinder in which said piston is actuated by the pressure of steam from said boiler, substantially as and for the purpose set forth. 6th. In a steam generator, the combination of the wall M, and the wall K within the wall M, with the body L of non-conducting material interposed between them, substantially as and for the purpose set forth. 7th. In a steam generator, the combination of the two exterior walls M and K, and the body L of non-conducting material interposed between them, with the combustion chamber A inclosed by the wall K¹, and having water and steam space all around it between the walls K and K¹, substantially as and for the purpose set forth. 8th. The combination, with the two exterior walls K and M, the body L of non-conducting material interposed between them, and the wall k_1 and the chamber A of the tubes C and D, the tubes E and F and the valves V, V, substantially as and for the purpose set forth. 9th. The combination of the structure, comprising the outer walls K and M, having the body L of non-conducting material interposed between them and their contained apparatus, and mechanism, and means for feeding fuel into the chamber A, substantially as specified, with the governor comprising the cylinder S, the piston S_1 and its rod, the spring T, the cone wheel U, the revolving shaft U_1, the wheel X, the shaft X_1 and its bearings, and the lever W and its support Y, substantially as and for the purpose set forth. 10th. The combination, with the structure comprising the walls M and K, and the body of non-conducting material L interposed between them and their contained mechanism, substantially as specified, with the wire coil B, and means, substantially as specified, for rendering the same incandescent, substantially as and for the purpose set forth. 11th. The combination of the walls M and K, the body of non-conducting material L interposed between them, the chamber A inclosed by the walls K_1 and having water and steam space all around it within said wall K, with the wire coil B capable of being made incande-cent, as specified, the tubes C and D, the tubes E and F, the valves V and V, the valve G, the screw and nut H, the vent J, the tube I, means, substantially as specified, for feeding fuel and air into the chamber A, and the governor comprising the cylinder S, the piston S_1 and its rod, the spring T, the cone-wheel U, the revolving shaft U_1, the wheel X, the shaft X_1 and its bearings, and the lever W and its support Y, substantially as and for the purpose set forth.

No. 28,217. Filling of Decayed Teeth.

(*Plombage des dents.*)

Charles H. Land, Detroit, Mich., U. S., 20th December, 1887; 5 years.

Claim.—1st. The process of securing an impression of a cavity in a decayed tooth, by means of a thin plate of suitable metal fitted to said cavity, substantially as described. 2nd The process of restoring decayed teeth, consisting, first, of securing the impression of the cavity in a decayed tooth by means of a thin plate of metal fitted into said cavity and forming a matrix or mould, second in moulding into said matrix, a plastic material to form a section or plug, and, third, securing said section or plug into the cavity of the natural tooth, substantially as described. 3rd. The process of restoring decayed teeth, consisting of first securing an impression of the cavity of a decayed tooth, by means of a thin plate fitted into said cavity, and forming a matrix, second, of moulding a plastic material into said matrix to form a section or plug, third securing said section or plug upon the matrix, and, fourth, securing both the matrix and its adherent section or plug into the cavity of the natural tooth, substantially as and in the manner described. 4th. The process of restoring decayed teeth, consisting of securing the impression of a cavity in a decayed tooth, by means of a thin plate of metal to form a matrix second, to provide said matrix with engaging pins, loops, or counter-sinks, third, to mould into said matrix a plastic substance to form a section or plug, fourth, engaging said section or plug upon a matrix, and, fifth, securing said matrix with with its adherent section of plug into the cavity of the natural tooth, substantially as described. 5th. The process of restoring decayed teeth, consisting of first partially filling the cavity, if necessary, to cover the exposed pulp as a protection, second, securing the impression of the cavity by means of a thin plate of metal fitted to said cavity to form a matrix, third, moulding a plastic substance into said matrix to form a section or plug, fourth, securing said section with or without said matrix in the cavity, substantially as and in the manner described. 6th. The combination, substantially as described, of a matrix and a section or plug, said matrix provided with pins, loops, or countersinks upon both sides for securing the section or plug to the matrix and the matrix to the tooth, substantially as described. 7th The process of restoring decayed teeth, consisting of fitting a thin sheet of metal to the cavity to form a mould, then shaping plastic material by said mould to the shape of said cavity, said plastic material, when moulded and hardened, engaged in said cavity by cement, substantially as described. 8th. As an article of manufacture, a matrix approximately fitted to a cavity in a decayed tooth, substantially as described. 9th. The herein described process of shaping a filling substance into the exact shape of a cavity of a decayed tooth, to form a section, consisting, first, of fitting a thin sheet of metal into said cavity to form a mould, second, causing said filling substance to conform to said mould, and, third, hardening said filling substance, when moulded, to form said section, substantially as described.

No. 28,218. Gas Pumping Engine.

(*Machine à pomper le gaz.*)

William E. Hale, Chicago, Ill., (assignee of Cyrus W. Baldwin,) Yonkers, N. Y., U.S., 20th December, 1887; 5 years.

Claim.—1st. The mode of operating gas engines, by means of new charges of uniform mixture regulated in quantity according to the work to be done, each admitted to and retained at the rear end of the cylinder while the spent gases are withdrawn at the forward end, substantially as described 2nd The within-described improvement in preventing the waste of gas in gas engines, consisting in retaining the new charge at the rear end of the cylinder, while extracting the old charge at the forward end, substantially as described. 3rd. The improvement in regulating gas engines, by means of varying volumes of a constant mixture for high powers, and by a mixture of varying proportions for low powers, substantially as described 4th. The use in a gas engine of a mixture of uniform proportions of gas and air, in connection with means for automatically varying the volumes of the charges during the working of the engine, substantially as described 5th The improvement in operating gas engines, consisting in regulating the volumes of charges of uniform quick explosive mixture under varying high resistance and in reducing the explosive quality of the mixture under low resistance, and and in cutting off the supply of mixture at intervals when the engine runs unloaded all the operations being automatic, substantially as described. 6th. The combination with the cylinder and piston of a gas engine, of a supply chamber or reservoir ports to admit gas and air, a valve and regulator and connections, whereby the quantity and quality of the mixture is varied according to the load and cut-off when there is little or no load, substantially as described. 7th. The combination, with a reservoir and means for supplying gas and air in uniform quantities thereto, of a cylinder and passage and valve regulating device driven by the engine to govern the volumes of mixture admitted to the cylinder, substantially as described. 8th. The combination in a gas engine, of a cylinder provided with a concave end, an inlet port at said end, a retarder opposite said curved end and an escape port at the opposite end, substantially as described 9th A gas engine provided with electrodes within the cylinder, means for holding said electrodes positively in contact and a contact, piece carried by the piston to separate said electrodes, substantially as described. 10th. The retarder within the cylinder opposite the inlet port, combined with a movable and a fixed electrode between the retarder and the end of the cylinder, substantially as described. 11th The combination of the cylinder fixed electrode, movable electrode spring holding the electrodes in contact and finger carried by the piston and the retarder, substantially as described. 12th. The combination of the fixed electrode, the movable electrode pivoted near one end, and a finger on the piston arranged to make contact with the short arm of the electrode, substantially as described. 13th. The combination of the cylinder head having an opening of a detachable block fitted to said opening and carrying an electrode, substantially as described. 14th. The combination of the cylinder port, and valve regulator governing said valve and reservoir, air and gas inlets, and a cock in the gas inlet pipe connected to be operated by said regulator, substantially as set forth. 15th. The combination with the cylinder, valve, reservoir and regulator, of a cut-off valve connected to be operated by said regulator, substantially as set forth 16th. The cylinder head provided with a chamber communicating with the inlet port, a retarder supported in front of the chamber, and a fixed and a movable electrode, substantially as described 17th. The combination of the cylinder having a concave rear end, a retarder in front of said end and central port, substantially as described. 18th. The combination of the cylinder piston, exhaust port 20 at the lower side of said cylinder valve projection carried by the piston, and inlet ports 13 on opposite sides of the path of said projection, substantially as described. 19th. The inlet valve combined with a wedge and springs, and regulator for moving the wedge, substantially as described. 20th The regulator consisting of weights carried by a revolving shaft and retracted by springs, a vibrating and laterally moving yoke and cams connected to be moved by the weights for moving it laterally, fingers projecting from said yoke, and a rod connecting with the parts to be regulated and provided with the shoulders u, substantially as set forth. 21st. The combination, with the cylinder and piston and electrical igniter, of a gas engine of an electrical generator and two driving pulleys of different diameters operated from the engine, and means substantially as described for throwing the largest driving pulley out of action as the speed increases, substantially as described. 22nd. The combination of the cylinder generator and two driving wheels of different diameters, and belts 112, 118, a regulator and a shifting device connected to be operated by the regulator, and to shift the belt from the larger driving wheel, substantially as described. 23rd. The combination in a pumping engine of a driving cylinder piston, crank shaft and connections, and a pumping cylinder pistons, crank shaft and connections all carried by a single bed or frame, the parts of the pump being supported thereby beneath the parts of the engine, the two cylinders being at the opposite ends of the structure, substantially as set forth. 24th. The combination, with a supporting bed or frame, of a driving cylinder and crank shaft supported in bearing at upper portion of the frame, a pumping cylinder and crank shaft supported in bearings upon the frame below those of the driving engine and the shaft of the pump, the two cylinders being at opposite ends of the structure, substantially as described. 26th. The combination, with a driving engine, of a hollow bed supporting the driving engine at the top of the bed having bearings beneath the cylinder of the driving engine for the crank shaft of the pump, a connecting rod extending between the pump piston and the lower crank shaft through the bed, and connections between the two crank shafts, substantially as set

forth. 26th. The combination with the driving engine of a hollow bed, supporting the same at the top, a pump cylinder extending through an opening at one end of the bed and bolted to the latter, a crank shaft supported at the opposite end of the bed below the cylinder of the driving engine, and a connecting rod extending between the piston of the pumping cylinder and the lower crank shaft, substantially as set forth. 27th. The combination, with the driving engine, of a hollow bed supporting the same, a pumping cylinder supported at one end of and extending into the bed and provided with a trunk piston, a crank shaft supported at the opposite end of the bed, and connected to the trunk piston by a rod extending through the bed, substantially as set forth. 28th. The pumping cylinder, piston crank shaft, and connecting rod supported upon a common bed, in combination with a separable frame or bed supporting the cylinder and shaft, and connections of a driving engine, and supported upon the bed of the pumping cylinder and connections between the engine shaft and pump shaft, substantially as described. 29th. The combination of the motor engine, hollow bed, pumping cylinder, and connections supported by the bed below the gas engine band, pulleys upon the crank shafts of the pumping and gas engines, and a band extending round both pulleys, substantially as set forth. 30th. The several contrivances and improved combinations of devices hereinbefore described, constituting improvements in gas and pumping engines, substantially as and for the purpose set forth

No. 28,219. Shoulder Brace and Skirt Support. (*Bretelle et support de jupon.*)

James Stewart, Pittsburgh, Penn., U. S., 22nd December, 1887, 5 years.

Claim—In a shoulder brace and skirt supporter, the combination of the shoulder loops *a*, elastic band *b*, buckles *d*, bridle-straps *e*, *f*, and the belt *g*, substantially as and for the purposes described.

No. 28,220. Necktie Supporting Loop.

(*Ganse de col.*)

Benjamin B. Scully, Lynn, Mass., U. S., 22nd December, 1887; 5 years.

Claim.—1st. A necktie-supporter loop formed of elastic wire, and having two pairs of arms *g*, each pair being formed at one end to be secured to the body a while, the other end may have free vibratory or lateral action, and with the inner arm of each pair bent outwardly, as at *l*, to form a seat, or enlarged opening K to receive the neck of the collar-stud, substantially as specified. 2nd. A necktie-supporter loop formed with parts or members *g* and and an eye *n* and with ends *j* formed and arranged to pass through said eye and to clinch over the wire forming said eye, substantially as set forth. 3rd. The combination, with the body of the necktie-supporter of a supporting loop formed with arms or members *g*, with an eye *n* and ends *j* extending through the body and clinched over the wire forming said eye, substantially as herein explained.

No. 28,221. Paper File. (*Serre-papier.*)

Calvin A. Campbell, Montreal, Que., 22nd December, 1887, 5 years.

Claim.—1st. In a letter-file, a rigid arched transferring wire combined with a wire moving in a vertical guide, and mechanism for imparting to said wire a vertical movement upward to close the space between the adjacent ends of said wires, as set forth. 2nd. In a letter-file, an arched transferring wire, in combination, with a receiving wire vertically adjustable and connected by the lever G to the rod H journalled in the bed-plate C, arranged substantially as and for the purpose specified. 3rd. In a letter file, a pair of arched transferring-wires formed in one piece, and rigidly fastened to the bed-plate C, in combination with the vertically adjustable receiving wires A, connected to the rob H by the lever G, substantially as and for the purpose specified. 4th. An index cover M having slots *o* made in it to fit over the receiving-wires A, in combination with a plate N fitted over one end of said cover hinged to the index cover M, and fitted over the transferring-wires B, substantially as and for the purpose specified. 5th The combination, with receiving-wires, of a plate O, lengthwise adjustably connected to the index cover M, and having tapered slots *k* to fit over the receiving-wires, substantially as and for the purpose specified.

No. 28,222. Apparatus for Automatically Testing Mine Gases. (*Appareil pour faire l'épreuve des gaz des mines*)

Thomas Shaw, Philadelphia, Penn., U. S., 22nd December, 1887; 5 years.

Claim.—1st. The within-described improvement in testing mine gases, consisting in exhausting a part of the air or gases in the mine chambers into a receptacle distant from such chambers, and testing such air or gases as they are so exhausted, substantially as set forth. 2nd. In an apparatus for testing gases of mines, testing means arranged at a testing station, a series of pipes each extending from a mine chamber to the testing means, and an exhausting device whereby a continuous stream of gas is caused to pass from each chamber to each tester, all substantially as set forth. 3rd. The combination in an apparatus for testing gases of mines, of a series of automatic testing devices at a station, each having an igniter, a series of pipes each leading from one of the mine-chambers to one of said devices, and a pump whereby the gases are caused to pass from each chamber to each tester, substantially as set forth. 4th. The combination of a tube leading from a mine-chamber, a pump for propelling the air through said tube, a gun connected by a pipe with said tube to receive a portion of the air thus withdrawn from the mine, and an igniter whereby the contents of the gun are fired when the same are explosive, substantially as described. 5th. The testing apparatus consisting of a hollow cylinder or gun receiving the air or gas to be tested, a port at one end, an igniter opposite said port, and a movable piston arranged to operate an audible alarm when the charge in the gun is fired, substantially as described. 6th. The combination of a cylinder, a tube for conducting thereto gases to be tested, a piston sliding in the cylinders, a gong arranged to be struck on the outward movement of the piston, and an ignitor arranged opposite an exit-port of the cylinder, substantially as described. 7th. The combination of the testing-cylinder, provided with an exit-port and valve at one end, an ignitor opposite said port, a sliding piston in the cylinder, a spring retracting said piston, a gong arranged to be sounded on the movement of the piston, and an indicator arranged to be moved on the explosion of gases in the cylinder, substantially as described. 8th. The combination of the testing cylinder, provided with a port with a hinged indicating arm for covering said port, and a gas inlet escape and igniter, substantially as set forth. 9th. The combination of the testing apparatus, substantially as described, and a tube extending into the mine, and provided at the inner end with a flexible section, and means for suspending the end thereof in an elevated position, substantially as and for the purpose set forth. 10th. The combination of the tester, a tube extending into the mine, a terminal flexible section and a nozzle constructed to be secured in an elevated position, substantially as described. 11th. The combination of the tester, a tube extending into the mine, a whistle secured to said tube, and means for propelling the air outward and backward in said tube, substantially as and for the purpose described. 12th. The combination of the tester, a tube extending into the mine, a whistle at the inner end of the tube, a pump for driving the air outward through said tube, an air-reservoir and a valve, whereby the air-reservoir may be put into communication with the tube to drive a current of air back through the same, substantially as and for the purpose set forth. 13th. The combination of the tube, the testing apparatus at one end, a whistle at the other, a pump, an air-reservoir and a valve, whereby to cut the pump from communication with the tube and put the latter into communication with the reservoir, substantially as set forth. 14th. The combination of the tester, the tube leading to the mine, the chamber, the pump, the air reservoir, the whistle adjacent to the tester, a valve controlling the flow of air from the reservoir to the whistle, and a chamber covered by a flexible diaphragm connected to the valve and communicating with the tube, substantially as described. 15th. The combination of the tester, a tube, a pump, a pressure apparatus communicating with the tube and connected with a valve, a whistle and a port controlled by said valve for the passage of air to the whistle, substantially as described 16th. The combination of the tube, the tester, the whistle at the inner end of the tube, an air-reservoir and a valve and connections constructed to control the flow of air to the outer whistle according to the pressure in the tube, and a second valve constructed to control the flow of air between said tube and the pump, and between said reservoir and the tube, substantially as described. 17th. The method of signalling by a single pipe with sounders at opposite ends, and means for operating said sounders by varying the flow in the pipe, substantially as described. 18th. The combination with a whistle and an air-reservoir communicating therewith, and valve controlling the passage of air, an exhaust pump communicating with a tube leading to a mine, and a valve-shifting device communicating with said tube and connected with said valve, substantially as described. 19th The combination of a whistle in a mine-chamber, a whistle at a station above ground, an exhaust pump, valve device and valve shifting device and connections, substantially as described.

No. 28,223. Means for Driving Machinery without Labour. (*Moyens de mettre en mouvement les machines sans main-d'œuvre.*)

David Jones and Charles E. Quilter, Gloucester, Eng., 22nd December, 1887; 5 years.

Claim—1st. The combination of water wheel adapted to be rotated within a case by a current of water, with a pulley rigidly connected to said wheel, around an axis common to both. 2nd The combination of water wheel, case and shaft, upon which the same water wheel is keyed, and suitable connections for leading a high pressure water supply to the wheel, and allowing the water to flow away from said case, substantially as above described. 3rd. The combination of portable case, water wheel mounted therein on a shaft carrying a driving pulley on its outer end, and adapted for the purpose of automatically driving machines with which it may be removably and temporarily connected, substantially as described.

No. 28,224. Electric Lamp Support.

(*Support de lampe électrique.*)

Pierre Latour, Ottawa, Ont., 22nd December, 1887; 5 years.

Claim.—1st An electric lamp swinging in the forked end of a lever provided with a counterpoise, and which is fulcrumed in a bracket extending horizontally from a post or other support, substantially as herein shown and described. 2nd In an electric lamp support, a vertically swinging lever fulcrumed in a horizontally-projecting bracket, and having one of its ends forked to span and carry a lamp, and its other end provided with an adjustable counterpoise, substantially as shown and described. 3rd. The combination in an electric lamp support, of the horizontal bars A, braces D and spring latch M, with a trussed lever fulcrumed in said bars, and having one of its ends forked to receive the lamp, and carrying on its opposite end the adjustable counterpoise K, secured in place by the set screw L, substantially as shown and described and for the purposes set forth.

No. 28,225. Gas and Fluid Meter.

(*Compteur à gaz et à fluide*)

Victor Dieghens, Brussels, Belgium, 22nd December, 1887, 5 years.

Claim.—1st. In a gas or fluid meter, a movable diaphragm, which forms an impermeable partition in the chamber of the apparatus, and comprises rings of india rubber, or other suitable material, the outer peripheries of which are clipped together by thin rings within inner annular grooves, and the inner peripheries by thin rings with outer annular grooves and a disc which forms the bottom, this diaphragm being provided with check straps, which keep it away from

the inner walls of the chamber, and limit the expansion of the said diaphragm, which is further provided with a rod guided and poised by a suitable spring, which rod operates the distributor and the indicator, in short, a movable diaphragm being capable of two extreme capacities, according as to whether it is expanded or folded up, which measures at each pulsation a volume of gas or fluid represented by the difference between the two extreme capacities, and which works without any friction and is impermeable, so as to prevent escape either way, substantially as and for the purpose specified and represented in the accompanying drawings. 2nd. In a gas or fluid meter, a distributer forming a tight joint at the upper end of the passage connecting the upper and lower parts of the chamber, the body of the distributer being formed with two passages with projecting rims in permanent communication, the one with the inlet and the other with the outlet, in which passages work the valves of triangular section with rounded angles and provided with suitable packing, and the reversing of which also reverses the feeding and discharge the said distributor being further comprising a movable rocking beam working on knife edges, which moves the cross piece connecting the valves by means of projections with set screws, and which is provided with a suitable spring carrying pawls to hold the valves in position, and to reverse them at the proper moment, the said rocking beam not acting on the cross piece connecting the valves until it has brought its spring to the greatest tension, the distributer comprising further a crank, one of the arms of which is provided with a knife edge, and works in the notch of the said rocking beam, while the other arm is provided with a stud passing through a slot of a hinged yoke with set screws, the crank being provided with a similar spring to that of the rocking beam, for the purpose of accelerating the movement of the said crank at the moment of the reversing of the valves, the distributor reversing the valves instantaneously, in one word, a distributor, the movable parts of which are of great sensitiveness, and do not permit of any escape of gas or fluid in either direction, substantially as and for the purpose specified and represented in the accompanying drawings. 3rd. In a gas or fluid meter, an indicator of the usual construction, but provided with a second ratchet wheel, which turns loose on the spindle with the worm, and is provided with one or more teeth of extra depth, so as to prevent the pawl to turn the driving ratchet-wheel, unless it engages with one of the deeper teeth, in one word, an indicator, which reduced the number of gearing wheels necessary for meters registering small quantities to the usual number, substantially as specified and represented in the accompanying drawings. 4th. The connection, provided with a tight joint between the indicator and the rod of the meter, comprising a bell crank pivoted to the distributor, one arm of which is formed with a slot in which engages the rod of the meter, and the other arm provided with stud to operate the forked end of the rod, which carries the pawl of the indicator, the tight joint consisting of a perforated plug, with a projecting rim round the opening and fixed on suitable packing in the lid of the chamber, the rod of the indicator passing through the perforated plug, the tight joint being formed by means of a small spiral spring surrounding the said rod and the projecting rim of the plug, the whole surrounded again by an india rubber tube, fastened in any suitable manner, substantially as and for the purpose specified and represented in the accompanying drawings. 5th. In a gas or fluid meter, the arrangement of each particular part, as also the combination of the whole of them, substantially as and for the purpose specified and represented in the accompanying drawings.

No. 28,226. Rubber and Leather Boot and Shoe Heel Plate Surface. (*Surface de plaque de talon de chaussure en caoutchouc et en cuir.*)

Charles Doney, Ottawa, Ont., 22nd December, 1887; 5 years.

Claim.—1st. As an improved article of manufacture, the skeleton plate A, provided with the corks B and the rim C, substantially as and for the purposes set forth. 2nd. The combination with a leather or rubber boot or shoe, of the skeleton plate A, projecting or embedded in the heel thereof, and provided with the corks B and the rims C, substantially as and for the purposes set forth.

No. 28,227. Apparatus for Unloading and Piling Goods. (*Appareil à décharger et empiler les marchandises.*)

George P. Brown, Montreal, Que., 22nd December, 1887; 5 years.

Claim.—1st. The combination of the post A, and standard C, with rack C_1, worm wheel D, with rack C_1, worm wheel D operated through worm E and gear D_2, cap F and lever G carried in bearings F, all constructed and operating substantially as and for the purposes set forth. 2nd. The combination, with the standard C, of the separate cap F carried on the wheels H, H, and collar K encircling the standard and secured to the cap, all substantially as and for the purposes described.

No. 28,228. Dust Collector.

(*Aspirateur de poussière.*)

William H. Curtis, Jackson, Mich., U. S., 22nd December, 1887; 5 years,

Claim.—1st. In a dust collector, a separating chamber provided with a tangential air inlet, an imperforate outer wall, a purified air outlet at the top, and a dust discharge opening in the bottom, substantially as described. 2nd. In a dust collector, a separating chamber, having a tangential air inlet, an imperforate wall, downwardly-extending curved shelves secured to the inner surface of said wall, a purified air outlet at the top, and dust discharge openings in the bottom, substantially as described. 3rd. In a dust collector, a suitable separating chamber, provided with an imperforate outer wall, a top having a purified air outlet, and a bottom, having one or more dust discharge openings and a central air inlet opening, substantially as described. 4th. In a dust collector, the combination, with a separating chamber provided with an imperforate wall, an air outlet at the top, and dust and air openings in the bottom of a hopper secured to the under side of said separating chamber, substantially as described. 5th. In a dust collector, the combination, with a separating chamber having a tangential air inlet, an air outlet at the top dust, an air opening in the bottom, and a cone secured to said bottom and formed with openings at or near its base, of a hopper secured to the under side of said separating chamber, and enclosing said air and dust openings from the outer atmosphere, substantially as described.

No. 28,229. Tension Joint for School Seats.

(*Joint à tension pour sièges d'écoles.*)

Francis R. Beal, Northville, Mich., U. S., 22nd December, 1887; 5 years.

Claim.—1st. In a tension joint for school seats, the combination of the head having the annular chambers and central annular lodge, the spring metal disc and cap F located therein, the seat arm having the lugs with inclined ends formed on its back face, the cap H having the locking arm *l* engaging with the recess C of the head, and lugs *i*, with inclined ends on its inner face, said lugs adapted to engage with the lugs of the arm A, and the bolt and nut for securing said parts together. 2nd. In a tension joint for school seats, the combination of the standard, the head K formed integral therewith, the hub P, the chamber C_1, having the ledges Z_1, the spring metal disc, the cap F having the nose *y* and arm *a*, the seat arm A having the chamber *f*, the lugs *i*, *i* and depressions *o*, *o*, the cap H, having the arm *l* engaging with the recess C, of the head and lugs *i*, *i*, with screw-bolt securing said parts together, as and for the purposes set forth. 3rd. In a tension joint for school seats, the combination of the head K, having the chamber C_1 and annular ledge, the square metal disc located in said chamber, the arm A, having the lugs *i*, *i*, with inclined ends, and depressed spaces *o* *o*, the cap H having the lugs i_1, i_1, with depressed spaces o_1, o_1 on its inner face, said cap adapted to be locked to the head K, also the cap F, with bolt and nut securing said parts together, as and for the purposes specified.

No. 28,230 Spark-Arrester. (*Arrête-étincelle.*)

Thomas Buchanan, Orangeville, Ont., 24th December, 1887; 5 years.

Claim.—The combination of the damper G, and the fan H, H, H, substantially as and for the purpose hereinbefore set forth.

No. 28,231. Straw Burning Stove.

(*Poêle consumant la paille.*)

Alonzo E Smith, Frankfort, D.T., U.S., 24th December, 1887; 5 years.

Claim.—1st. A straw-burning stove, consisting of a body or drum A open at the top, and having a bottom plate B provided with an opening *b*, a damper H fitted at said opening, a base C on which the body is supported loosely for removal, and provided with an opening *c* registering with the opening *b*, an ash-pan F fitted to the base C, a top J fitted to the body A and adapted for removal therefrom, and a pipe K fitted to the top, substantially as shown and described. 2nd. A straw-burning stove, made with a removable body having closed sides, and a damper, which, when closed, closes the body at the bottom, and a top or head piece J fitted to the body and made removable therefrom, and provided with a smoke-pipe K, in combination with an over-head draft-pipe L, to which the pipe K is telescopically fitted, substantially as shown and described.

No. 28,232. Rotary Saw Sharpener.

(*Aiguiserie de scie rotative.*)

George Mealey, (assignee of Robert Gaskin, jr.), Portland, Me., U.S., 24th December, 1887, 5 years.

Claim.—1st. In a rotary saw-sharpener, the combination, with a revolving grinding-wheel mounted in stationary bearings, of a carriage having a forward and backward motion, an adjustable saw-holder mounted on the said carriage, and a frame sliding on the main frame and having connection with a rod or arm, provided with lugs forming bearings for a screw having a sliding nut, and carrying a pawl which revolves the saw on its axis on the said holder, the distance of one tooth, substantially as described. 2nd. In a rotary saw-sharpener, the combination, with a revolving grinding-wheel mounted in stationary bearings, of a carriage having a forward and backward movement, a saw-holder mounted to slide on the said carriage, means for moving the said saw-holder longitudinally on the carriage, a frame sliding on the main frame and having connection with a rod or arm, provided with lugs forming bearings for a screw having a sliding nut, and carrying a pawl which engages the teeth of the saw, and means for imparting a longitudinal movement to the said frame carrying the pawl, substantially as shown and described. 3rd. In a rotary saw-sharpener, the revolving shaft H, the slotted crank-disk G_3 and the adjustable screw-threaded rod G_2, in combination with the carriage C adapted to slide on the main frame, the nut G in which screws the said rod G_2, and which is held in brackets on the said carriage C, and the adjustable saw-holder D mounted to slide on the said carriage C, substantially as shown and described. 4th. In a rotary saw-sharpener, the carriage C having a forward and backward movement, and the rack C_2 on the said carriage, in combination with the saw-holder D mounted to slide on the said carriage C, and carrying the shaft F provided with the hand-wheel F_2 and mounted to turn in the said saw-holder D, and the pinion F_2 on the said shaft F and meshing into the rack C_2, substantially as shown and described. 5th. In a rotary saw-sharpener, the carriage C, the adjustable rod G_2, the slotted crank-arm G_3 and the shaft H, carrying the bevel gear-wheel H_2, in combination with the shaft H_3 carrying the bevel gear-wheel H_2, meshing in the said gear-wheel H_2, the cam H_4 secured to the said shaft H_3, the sliding bar I_2 operated by the said cam H_4, the link I_4 pivotally connected with the said bar I_2 the slotted arm J in which one end of the said link I_4 is adjustable, the rocking shaft J_2 to which the said arm J is fastened, the arm J_2 on the said shaft J_2, and the frame K having connection by a pin K_2 with rod or arm N, provided with lugs N_2, N_2 forming bearings for a screw N_3, having a sliding nut L_2 and carrying the pawl L and connected by the pin

K1 with the said arm J2, substantially as shown and described. 6th. In a rotary saw-sharpener, the frame K sliding on the main frame A, the pin K2 attached on the said frame K and the pawl L, in combination with the adjustable rod N having the slot N1 and lugs N2 forming bearings for a screw N3 carrying a nut L1, to which is pivoted the said pawl, the bolt O held on the said rod N and provided with the bevelled collar O1 engaging the central aperture of the saw and the nut O2 screwing on the said bolt, substantially as shown and described.

No. 28,233. Cover for Barrels, etc.

(*Couvercle pour barils, etc.*)

Joseph Invosburgger and Charles B. McBride, St. Paul, Minn., U.S., 24th December, 1887, 15 years.

Claim.—1st. A grated receptacle cover composed of an outer and an inner band, an intermediate band lying in a higher plane than the other bands, and a series of strands connecting the several bands and forming a central grated portion to cover a receptacle, substantially as described. 2nd. A grated receptacle cover composed of the series of three bands, the middle one lying in a higher plane than the others, and the series of strands connected at one end to the inner band, then passing around the middle band and thence downward and connected to the outer band, substantially as described. 3rd. A grated receptacle-cover formed of strands interwoven with one another to form a central grated portion, and then extended in single unwoven strands upwardly above the plane of the central portion, and then downwardly to form diverging sides, and a band to which the single strands are connected to hold them in position, substantially as described.

No. 28,234. Door-Check. (*Arrête-porte.*)

John G. Witte and William L. Witte, (assignees of Francis L. Becker), New York, N.Y., U.S., 24th December, 1887; 5 years.

Claim.—1st. Apparatus for checking the closing movement of a door, composed essentially of a yielding brake and a pivoted scroll-shaped buffer, provided with a spring for normally rocking the buffer, after its disengagement from the brake, during the opening movement of the door into the position in which it presents its longer radius for re-engagement with the brake, at a prescribed stage in the closing movement of the door. 2nd. In door-checking apparatus of the character described, a pivotally mounted scroll-shaped buffer, a spring for rocking the buffer upon the axis in one direction, and an adjustable stop for limiting the range of rocking movement imparted by such spring to the buffer. 3rd. In door-checking apparatus of the character described, the combination as herein set forth, of a pivotally mounted scroll shaped buffer with an adjustable yielding brake bar. 4th. The combination, as herein described, of the buffer A, the spring D, the adjustable stop *a* and the yielding brake B, as and for the purpose set forth. 5th. The combination, as herein described, of the buffer A, the spring D, the adjustable stop *a*, the brake bar B and the brake bar adjusting screws b^2 and b^3, as and for the purposes herein set forth.

No. 28,235. Amalgamating Table.

(*Table d'amalgamation.*)

Jacob C. Wiswell, Medford, Mass., U. S., 24th December, 1887, 5 years.

Claim.—1st. In an amalgamating apparatus, the combination of a table provided with one or more pockets or riffles below its upper surface, containing free mercury, one or more metal plates projecting below the upper surface of the table into said riffles in close proximity to, but not in contact with, the mercury, and electrical connections, substantially as described, whereby said plates become anodes and the bodies of mercury in the riffles become cathodes, as set forth. 2nd. In an amalgamating apparatus, the combination of a table provided with one or more pockets or riffles below its upper surface, containing free mercury, one or more plates mounted to oscillate over said riffles, and projecting below the upper surface of the table, their lower edges being in close proximity to the mercury in the riffle, stops whereby the yielding movement of said plates is limited, and electrical connections, whereby said oscillating plates become anodes, and the bodies of mercury in the riffles become cathodes, as set forth. 3rd An amalgamating table having riffles containing free mercury, and means for electrifying said mercury, and thereby keeping it clean and in proper condition for amalgamation without loss, as set forth. 4th. The bed having the transverse openings, and the metal troughs secured to its underside below said openings. 5th. The bed having the transverse openings, the troughs below said openings, said troughs having discharge orifices, and the gutter arranged to receive matter discharged from the troughs, as set forth. 6th. The table having a series of troughs or riffles provided with discharge orifices, the gutter arranged to receive the discharge from all the riffles, the bars pivoted or jointed to the table and provided with locking devices and the stoppers secured to said bars, as set forth.

No. 28,236. Trip Mechanism for Grain Binders. (*Mécanisme de renversement pour lieuses à grain.*)

The Milwaukee Harvester Company, (assignee of Ellen M. Bullock, administratrix of the estate of Joseph P. Bullock), Milwaukee, Wis., U.S., 24th December, 1887, 5 years

Claim.—1st. In a grain binder, a trip arm having an eccentric housing in its hub, and this housing provided with a slot to receive the needle shaft, which latter forms a pivot for the trip arm, in combination with the needle carrying a stud arranged to travel against the sides of the housing, and a catch for engagement with the inner end of said trip arm during its act of compression. 2nd. The combination in a grain binder, of a needle having a stud on one side near its shaft, a trip arm having an eccentric housing and slot for the needle shaft, as well as a lug for engagement with the underside of the needle and mechanism for holding the rear end of the trip arm while the bundle is being compressed, as set forth. 3rd. In a grain binder, a trip arm having an eccentric housing in its hub, and this housing provided with a slot to receive the needle shaft, which latter forms a pivot for the trip arm, in combination with the needle carrying a stud arranged to travel against the sides of the housing, and having its hub provided with a shoulder, a finger having one end thereof connected to a spring catch for said trip arm, and its other end arranged to come in the path of the shoulder on the needle hub, as set forth.

No. 28,237. Steam Boiler. (*Chaudière à vapeur.*)

Joseph A. Mumford, Hantsport, N.S., 27th December, 1887; 5 years.

Claim.—1st. In combination with the cylindrical boiler, of the fire-box located in the same, having substantially flat level top section, as set forth. 2nd. In combination with the inclined cylindrical boiler, of the inclined cylindrical fire-box located in the same, having the triangular-shaped substantially level top section, as set forth 3rd. In combination with the inclined cylindrical boiler, the fire-box located in the same, having a flat top section of stay bolts connecting the flat section with the outer shell, substantially as described. 4th. In combination with the inclined cylindrical boiler provided with the water front, as described, of the fire-box located therein, having the flat top section, and flues connecting the rear end of the fire-box with the rear end of the boilers, substantially as described. 5th. The combination of an inclined boiler, with a combustion chamber located beneath its raised end, with an air or steam supply therein, and a smoke exit, substantially as described. 6th. In combination with an inclined boiler, a fire-box located in its lower end, flues connecting said fire-box with the raised end of a chamber located beneath said raised end with air or steam supply therein, and a smoke exit at its lower end, whereby the smoke and products of combustion pass from the fire-box through the flues beneath the forward end of the boiler, commingling with the air or steam therein thence around over the boiler and out over its lower end, as set forth. 7th. In combination with an inclined boiler, a fire-box located in its lower end, and flues connecting said fire-box with the raised end of a secondary fire-box located beneath said raised end through which the products from the first-named fire-box pass before reaching the smoke exit, substantially as described. 8th. In combination with an inclined boiler, a fire-box located in its lower end, and flues connecting said fire-box with the raised end of a grate located beneath said raised end, and doors at the rear of said boiler for supplying fluel to said last-named grate and for removing the ashes, substantially as described. 9th. In combination with an inclined boiler, a fire-box in its lower end, a smoke passage beneath its raised end, and a smoke exit above its lower end, of a door beneath its lower end for removing dirt in the smoke passage beneath the boiler, substantially as described 10th. In combination with an inclined cylindrical boiler having the flat-topped fire-box in its lower end, and flues connecting said fire-box with the raised end of a combustion chamber located beneath said raised end, and a smoke exit above its lower end, substantially as described,

No. 28,238. Shingle Sawing Machine.

(*Machine à scier le bardeau.*)

Alexander Mumford, Hantsport, N.S., 27th December, 1887; 5 years.

Claim.—1st. In a shingle sawing machine, the combination, with the saw, of a jointer mounted on the same shaft therewith, and in proximity thereto on the delivery side, and a guide or chute, whereby the sawed shingles are delivered on the side of the jointer away from the saw, as set forth. 2nd. In a shingle sawing machine, the combination, with the block carrying carriage and saw, of a balance wheel mounted on the saw arbor having a jointed saw secured to its periphery, substantially as described. 3rd. In a shingle sawing machine, the combination, with the block carrying carriage and saw, of a balance wheel mounted on the saw arbor having segments of a jointing saw secured to its periphery, substantially as described. 4th. In a shingle sawing machine, the combination, with the block carrying carriage and the saw, of a jointer mounted on the saw arbor, and a swinging carriage for holding the shingles while being jointed, substantially as described. 5th. In a shingle sawing machine, the combination, with the block carrying carriage and saw, of a balance wheel mounted on the saw arbor having a jointing saw secured to its periphery, and a swinging carriage for holding the shingles while being presented to the jointing saw, substantially as described. 6th. In a shingle sawing machine, the combination, with the saw, of a block carrying carriage and a continuous chain running over suitable guide wheels for causing its reciprocation, substantially as described. 7th. In a shingle sawing machine, the combination, with the saw and block carrying carriage, of a continuous chain running over suitable guides and power pulleys, and connected to said block carrying carriage by a pitman or rod, whereby the said carriage is caused to reciprocate with relation to the saw, substantially as described. 8th. In a shingle sawing machine, and in combination with the saw and block carrying carriage free to move in one direction, of a continuous chain running over suitable guide and power pulleys, and connected with said carriage for moving it in the opposite direction, substantially as described. 9th. In a shingle sawing machine, and in combination with the saw and block carrying carriage, of a continuous chain running over suitable guide, and power pulleys, and connected to said carriage and a clutch connection between said chain and power pulley, whereby the said carriage is positively moved in one direction but is free to move in the opposite direction, substantially as described. 10th. In a shingle sawing machine, and in combination with the saw and block carrying carriage, of a continuous chain running over sprocket wheels and connected to said carriage, one of said sprocket wheels being connected rigidly to a ratchet wheel, and a pawl mounted rigidly on the power shaft for engaging said ratchet wheel, whereby the carriage is moved positively in one direction but is free to move in the opposite direction, substantially as described. 11th. In a shingle sawing machine, and in combination with the saw and reciprocating block carrying carriage, of a mechanism for causing the reciprocation of said carriage con-

sisting of a continuous chain connected therewith and running over suitable sprocket wheels, one of which is connected to a ratchet wheel and loosely mounted on the power shaft, a pawl mounted on said shaft for engaging said ratchet wheel, and causing its rotation in one direction but leaving it free to rotate in the opposite direction, substantially as described.

No. 28,239. Dust Pan. (*Porte-ordure.*)

Henry W. Booth, Toronto, Ont., 27th December, 1887; 5 years.

Claim.—A dust-pan, in which the bottom and back are formed from a single sheet of metal, the bottom slanting inwardly for about half its width, where it is bent downwardly at an acute angle to form a dust-retaining receptacle, the bottom of which is flat and substantially flush with the front edge of the pan, the back of the pan being rounded over to form a partial cover over the receptacle, and constitute a pocket to receive articles when the pan is hung upon the wall, substantially as and for the purpose specified.

No. 28,240. Filter for Suction Pipes or Pumps. (*Filtre pour tuyaux à suction ou pompes.*)

Battese Revoir, Syracuse, N Y, U S., 27th December, 1887; 5 years.

Claim.—The combination, in a filter for suction pumps, of the cylinder A, connecting with the pump at one end by means of the pipe D, the stationary diaphragm *d* and removable diaphragm *e*, and an intermediate filling space, the spider *a* bearing at its centre and the ends of its arms against the removable diaphragm, the braces L having a common bearing against the centre of the spider, and the movable head C carrying the said braces, and having a central induction aperture and sponge cup, the whole arranged substantially in the manner and for the purposes specified.

No. 28,241. Mower. (*Faucheuse.*)

Francis N. Violet, Green Bay, Wis., U. S., 27th December, 1887; 5 years.

Claim.—1st. The combination, in a mowing machine, with the axle and cutter, of a sleeve and gear frame mounted upon said axle, a crank-wheel and gearing carried by said gear frame, a triangular lever connected at one corner with said crank-wheel, and at another corner with said cutter, and a yoke swivelled to the remaining corner of said lever, and connecting it with the sleeve on said axle, substantially as and for the purposes set forth. 2nd. The combination, in a mowing machine, with the driving wheel axle and cutter, of a sleeve mounted upon said axle, a crank-wheel driven by said driving wheel, a triangular lever connecting the crank wheel with said cutter, and a yoke swivelled to said lever and pivoted to a box or collar adapted to turn on said sleeve, substantially as and for the purposes set forth. 3rd. The combination, in a mowing machine, with the cutter and driving mechanism, of a triangular lever, one side of which is adjustable in length, substantially as and for the purposes set forth. 4th. The combination, in a mowing machine, with the cutter, a crank-wheel and driving mechanism, of a triangular lever connecting said crank-wheel and cutter, and composed of three sections, one of which may be shortened or lengthened, substantially as and for the purpose set forth. 5th. The combination, in a mowing machine, of the finger bar attached at the inner end to a shoe, a sleeve connected with the frame of the machine, and having a hole flaring from the middle toward each end, a pin or bolt passing through ears on said shoe and through said sleeve, and a lever arranged to raise and lower the heel of said shoe, substantially as and for the purposes set forth. 6th. The combination, in a mowing machine, with the axle-driving wheels and cutter, of a sleeve mounted upon said axle, a gear frame attached thereto and carrying a crank connected by gearing with said axle, from which said crank is driven, a shoe block connected by arms with boxes, which are mounted and arranged to turn upon said sleeve, a finger bar connected with said shoe block, a triangular lever connecting said crank and cutter, a yoke swivelled to said lever and pivoted to one of the boxes on said sleeve, so as to be moved with said shoe block, and a lever arranged to raise or lower said shoe block, substantially as and for the purposes set forth.

No. 28,242. Steam Heater and Hot Air Furnace Combined. (*Calorifère à vapeur et à eau.*)

Charles D. Howard, Syracuse, N. Y., U. S., 27th December, 1887, 5 years.

Claim.—1st. In combination with the fire-pot and combustion chamber, the flue D extending from the top of the combustion chamber down at the exterior of the same, the flue sections D_1, D_2, arranged vertically in line with each other and terminating in the exit flue E at the base, the annular radiators R, R, arranged successively one below the other, and extending completely around the combustion chamber and fire-pot, and connected with the intervening flue-sections D_2, and the dampers *a*, *a*, *a*, pivoted across the centers of the intersections of said radiators and flue sections, and adapted to stand either vertically for a direct draft or diagonally across the said intersections to direct the products of combustion through the radiators, substantially in the manner as specified. 2nd. The combination with the fire-pot and combustion chamber, annular water and steam pipes arranged horizontally one above the other, and concentrically around the top of the combustion chamber, vertical pipes connecting said horizontal pipes, a coiled water pipe inside of the fire pot, and pipes connecting the upper and lower ends of the coiled pipes respectively with the aforesaid external horizontal pipes, substantially as described and shown.

No. 28,243. Railway Signal. (*Signal de chemin de fer.*)

Samuel T. Street, Deposit, N.Y., U.S., 27th December, 1887, 15 years.

Claim.—1st. The combination, in an electrical signalling device for railways, of an electrical signal circuit, a rod or arm arranged to be vibrated by the jar caused by a passing train, and a circuit-closing spring mounted on said arm, whereby, on motion of the arm, the spring is caused to vibrate and to close the circuit intermittently, substantially as set forth. 2nd. The combination, in an electrical signalling device for railways, of an electrical signal circuit, a rod connected to a rail and arranged to be vibrated by a passing train and a coiled spring mounted on said lever, whereby, on motion of the lever, the spring is caused to vibrate and to close the circuit intermittently, substantially as set forth. 3rd. The combination, in an electrical signalling device for railways, of an electrical signal circuit, a rod connected with a rail and arranged to be vibrated by a passing train, and thereby to intermittently close the circuit by means of a coiled spring D mounted upon said lever, substantially as set forth. 4th. The combination, in an electrical signalling device for railways, of an electrical signalling device for railways, of an electrical signal circuit, a rod A adapted to be vibrated by a passing train, the spring bar C mounted on the lever, and a coiled spring D connected to said bar C, said spring D forming part of an open electric circuit, and passing between adjustable contact points forming part of said circuit, substantially as set forth. 5th. The combination of the rod A, arranged to be vibrated by a passing train, a signal-circuit, a spring D mounted on the rod and adapted to vibrate on motion of the rod, connected contact points constituting a terminal of the signal circuit, arranged above and below the spring D, which spring constitutes the other terminal of the circuit, substantially as set forth. 6th. In a railway signalling device, the combination of the rail R, rod A, brackets B, B_1, spring bar C, setting device C_1, coiled spring D, insulating block D_{11}, connected and adjustable contact springs F, *f*, upon an insulated base carried upon the rod A and the binding posts F_{11}, F_{111}, substantially as set forth. 7th. In a railway signalling device, the combination of the rod A, insulated base E, adjustable springs F, having contact points *f*, and an electric connection F_1, with binding post F_{11}, and the coiled spring D passing between the contact points *f* and provided with binding post F_{111}, to form an electric circuit, substantially as set forth. 8th. In a railway signalling device, the combination of the bar A, insulated base E, springs F, *f*, connection F1, binding post F_{111}, set screw G, brackets G_1, spring D, binding post F_{111} and wires *w*, connected in electric circuit with battery and signal, substantially as set forth.

No. 28,244. Harrow. (*Herse.*)

LeRoy W. Stevens, Auburn, N.Y., U.S., 27th December, 1887; 15 years.

Claim.—1st. In a harrow, the combination of draft-bars with cross-bars intersecting each other, said bars having at certain points of their length portions depressed below the level of the main portions thereof, substantially as described. 2nd. A harrow, having draft and cross-bars intersecting each other, said bars having portions depressed below their main portions, and harrow teeth attached to said bars, substantially as described. 3rd. In a harrow, the combination, with draft-bars and cross-bars intersecting each other, and having portions at the points of intersection depressed below the main portions of the bars, the elevated portions of said cross-bars being inclined upwardly from the front to rear between said depressed portions, substantially as described. 4th. A harrow, having teeth-guards extending upwardly and outwardly from the seat for the teeth, substantially as described. 5th. A spring tooth harrow, provided with a frame consisting of intersecting draft and cross-bars, elastic in all directions in the plane of the frame, whereby the spring teeth are relieved from excessive strain, substantially as described. 6th. A spring tooth harrow, provided with a frame having intersecting draft and cross-bars rigidly connected at the points of intersection, the said draft-bars having adjacent to the teeth bracing portions deflected out of the horizontal plane of the frame, substantially as described. 7th. A spring tooth harrow, provided with a frame having intersecting draft and cross-bars, said draft and cross-bars having adjacent to the teeth, portions deflected out of a horizontal plane, substantially as described. 8th In a spring tooth harrow, the combination, with intersecting draft and cross-bars rigidly connected, of spring teeth connected therewith, said bars being provided adjacent to the teeth, with portions deflected out of the horizontal plane of the frame, substantially as described. 9th. In a spring tooth harrow, the combination, with intersecting draft and cross-bars rigidly connected at the points of intersection, of spring teeth connected to said bars at the points of intersection, said bars being provided adjacent to said teeth with portions deflected from a horizontal plane, substantially as described. 10th. In a spring tooth harrow, the combination, with intersecting draft and cross bars, of spring teeth connected to said harrow, said harrow being also provided with teeth guards, which extend in an upwardly-disposed direction from a point adjacent to the point where said teeth are connected to said harrow, substantially as described. 11th. In a spring tooth harrow, the combination, with intersecting draft and cross-bars rigidly joined at the point of intersection, of spring teeth connected to said harrow at a point adjacent to the intersection of said bars, said bars forming arms or guards, which extend outward and upward from a point adjacent to the point of intersection of said bars, substantially as described. 12th. In a harrow, the combination, with intersecting draft and cross-bars rigidly connected at the points of intersection, of spring teeth connected to the frame, said teeth extending upwardly and rearwardly from the point of attachment, and having a portion or portions of the same protected by guards or arms extending outwardly and upwardly from a point adjacent to the seats of said teeth, substantially as described. 13th. As a new article of manufacture, a spring tooth for a harrow and its attaching devices, consisting of the tooth, a seat for same, and two or more diverging and upwardly and outwardly extending attaching arms, substantially as described.

No. 28,245. Tricycle. (*Tricycle.*)

Frank J. Bayer and Edward Lease, DuBois, Penn., U. S., 27th December, 1887, 5 years.

Claim.—1st. The combination, with the frame composed of the side bars *a* and the filling piece a^1, and the wheel B_1 journalled between the front ends of the side bar *a*, and having cranks *e*, of the counter-

shaft E, the pitman f_2, connecting cranks f with cranks e, the crank-shaft G and gearing connecting the shafts G and F, substantially as set forth. 2nd. The combination, with the frame, consisting of the side bar a, having slots a_2 in its ends, and the filling piece a_1, the wheel B1, and the counter-shaft F connected with the wheel B1, for imparting motion thereto, of the swinging support having its uprights fitted in and guided in its movements in said slots a_2, the shaft G, the band H, connecting the shafts G and F, and the brace lever I, substantially as described. 3rd. The combination, with the platform, the rear axle and wheels, and the plate pivoted to the front of the platform, of the standard, the frame, the steering-wheel, the counter-shaft, the pitman connecting the counter-shaft with the shaft of said wheel, and mechanism, substantially as described, for driving said counter-shaft, as and for the purpose specified. 4th. The combination, with the platform having an aperture therethrough, within convenient reach of the foot, the axle journalled thereto, and the wheel keyed on the axle of the bar pivoted midway its ends beneath the platform, one end coming opposite and adapted to bear on the presser rod, connected with the other end of the bar and extending through said aperture, substantially as described.

No. 28,246. Button-Hole Attachment for Sewing Machines. (*Machine à coudre faisant les boutonnières.*)

The Moore Brothers Manufacturing Company, (assignee of John W Blodgett), Chicago, Ill., U.S., 27th December, 1887; 5 years.

Claim.—1st. In a button-hole attachment for sewing machines, the combination, with a cloth clamp and its actuating pitman, formed in its inner end with an angular opening, of a feeding cylinder provided with a wrist pin formed with three convex sides, and means for operating this cylinder from the needle bar, substantially as and for the purpose set forth. 2nd. In a button-hole attachment for sewing machines, the combination, with a cloth clamp and a pitman for operating the same, of a feeding cylinder, means for driving the same from the needle bar of a sewing machine, a wrist pin sliding in a radial dove-tailed groove in the end of said cylinder, and a regulating screw passed through one side of the cylinder into the pin, substantially as and for the purpose set forth. 3rd In a button-hole attachment for sewing machines, the combination, with a cloth clamp and its actuating pitman having a square opening, of a feeding cylinder provided with a radially adjustable wrist pin formed triangular with convex sides, and means for operating said cylinder by connection with the needle-bar of a sewing machine, substantially as and for the purpose set forth. 4th. In a button-hole attachment for sewing machines, the combination, with a cloth clamp and a guide on which it is held and moved provided with a pivotal stud or projection, and means, substantially as described, for automatically shifting this pivotal stud at the ends of the button-hole, of a cam grooved oscillator cylinder connected directly to the guide plate, and a connection between said cylinder and the needle bar of a sewing machine, whereby the guide and clamp is oscillated upon its automatically shifting pivot in properly working the button-hole, substantially as and for the purpose set forth. 5th. In a button-hole attachment for sewing machines, the combination, with the cloth clamp and its guide plate, and means, substantially such as described, for switching the same laterally of an oscillator cylinder connected to the needle bar of the sewing machine, and a stud or roller upon the cloth, clamp guide for engaging the oscillator cylinder and serving both to oscillate said guide and clamp, and as a fulcrum upon which they are switched laterally at the ends of the button-hole, substantially as and for the purpose set forth. 6th. In a button-hole attachment for sewing machines, the combination, with the cloth clamp and its guide, and means, substantially such as described, for oscillating them in making the overedge stitch, of a switching cam and means for feeding it forward, and a stud or collar upon the cloth, clamp guide for engaging said cam, whereby said stud or roller is made to act both as a connection to switch the clamp and guide at the ends of the button-hole, and as a fulcrum upon which they are oscillated in overstitching, substantially as and for the purpose set forth. 7th. In a button-hole attachment for sewing machines, the combination, with the cloth clamp, the guide plate for the same formed with a transverse guide slot and having a retaining screw passed through the same to hold it longitudinally, but permit a free lateral shifting, of a shifting cam and a oscillator cam connected directly to the plate upon diametrically opposite sides of its retaining slot and screw, and means, substantially as described, for imparting an intermittent motion from the needle bar of a sewing machine to the two cams, substantially as and for the purpose set forth. 8th. In a button-hole attachment for sewing machines, the combination, with the cloth clamp and its guide plate, provided with a stud or projection for engaging its switching cam, of a cam cylinder formed with a peripheral cam groove having, at one or more points, a sharp lateral bend returning at once to the main line of direction of the groove, whereby an eyelit is worked at the end of the button-hole, substantially as shown and described. 9th. In a button-hole attachment for sewing machines the combination, with the cloth clamp and its guide plate, the latter provided with a switching stud or roll, of a combined feeding and switching cylinder formed with a peripheral cam groove, for switching the guide and clamp by engagement with said stud or roll, and also provided with a wrist-pin on its end, and a pitman connecting the pin directly with the cloth clamp for feeding it forward and backward on its guide, substantially as and for the purpose set forth. 10th. In a button-hole attachment for sewing machines, the combination, with the cloth clamp and its guide, a switching and feeding cylinder connected by a pitman with the clamp, and formed with a peripheral cam groove engaging a stud on the guide, and a main operating lever for connection with the sewing machine middle bar, of a friction clutch composed of two parts, one of which is closely fitted upon the cylinder, and the other engaged with the operating lever and connected to the first part by a clutch pin, which rocks loosely in the edge of the opening which embraces the cylinder, substantially as and for the purpose set forth. 11th. In a button-hole attachment for sewing machines, the combination, with the cloth clamp guide and its clamp, means for oscillating the same in forming the overedge stitch, a cam grooved cylinder for shifting the clamp and guide at the end of the button-hole, and a clutch upon said cylinder having one arm extended and provided with a regulating check screw, of a main operating lever fulcrumed on the main frame and provided with a cam portion for engagement with the extended clutch arm, and a pawl for feeding the oscillator cylinder also engaged with said lever, substantially as and for the purpose set forth.

No. 28,247. Corn and Cane Cutter.

(*Machine à couper le blé d'inde et la canne.*)

Joseph Albertson and John Mortimer, San Francisco, Cal., U.S., 27th December, 1887; 5 years.

Claim.—1st. In a corn and cane cutting machine, the frame having the carrying wheels with a gear E, in combination with a horizontal circular cutter, its periphery extending beyond or to one side of the path of the supporting wheel, a vertical shaft d, by which said cutter is carried, having a pinion d_1, a short shaft, having a gear g_1 and a pinion g, a counter-shaft having an adjustable gear f_1 and pinion f, and a clutch lever and connections for throwing the pinion into and out of gear with the gear E on the wheel, substantially as herein described. 2nd. A corn and cane cutting machine comprising the frame, having the carrying wheels and a cross-bar carried by the frame, and brackets c on the bar, a vertical shaft in the bracket, having on its lower end a circular horizontal cutter to one side of the travel of the machine, and gearing by which the rotation of the wheel is imparted to the cutter, a shield or guard for protecting said gearing, an inclined platform and swinging fingers or guards in said platform, and a lever on the main frame and connections for operating the fingers, all arranged and adapted to operate substantially as herein described.

No. 28,248. Washing Machine.

(*Machine à blanchir.*)

Samuel Mirfield and John D. Cumming, Campbellford, Ont., 27th December, 1887; 5 years.

Claim.—1st. The internal bottom 5, having abrupt ends to form a set off from the ends of the suds-box, as set forth for the purpose described. 2nd. The swinging hammer 13, having a flat or convex bottom vertical sides, and inclined ends provided with ribs 15 parallel to the sides, and a rib 16 at the foot of the ribs 15, as set forth. 3rd. The combination, with the suds-box, of the swinging hammer 13 having a concave or flat bottom, vertical sides and upwardly convergent ends provided with ribs parallel to the sides, pitman 19 having bifurcations connected to the arms of the hammer, and crank shaft 17 provided with balance wheel 18, as set forth.

No. 28,249. Metal Screw Machine.

(*Machine à vis métalliques*)

The Russell and Erwin Manufacturing Company, New Britain, (assignee of Horace K. Jones, Hartford), Conn., U.S., 28th December, 1887; 15 years.

Claim.—1st. The mechanism for reciprocating the feed, which consists of the combination of the feed cam G, the grooved levers E and F pivoted to the framing, one below and the other above said cam, and the adjustable connecting link H, substantially as described and for the purpose specified. 2nd. The mechanism for reciprocating the threader which consists of the combination of the lever 46 pivoted to the framing, the lever E which actuates the feed slide c, mechanism for reciprocating said lever E, and the adjustable link 47 for connecting said levers E and 26, substantially as described and for the purpose specified. 3rd. In a machine for making screws, the combination of mechanism for feeding the wire intermittently, the reciprocating threader carriage, the lever pivoted to the framing of the machine for operating said carriage, the leading cam and mechanism operatively connecting said cam and lever, whereby the threader carriage has imparted to it a positive motion in both of its movements, substantially as described. 4th. In a machine for making screws, the combination of the rotary spindle having also a reciprocating movement, the radially moving threading rollers l, and mechanism for forcing said rollers into action upon the wire, and then releasing their hold at each reciprocation of the spindle, substantially as described and for the purpose specified. 5th. In a machine for making screws, the combination of the spindle J, the rollers l mounted in radially moving slides in the head of said spindle, the sleeve q and mechanism for forcing said sleeve over the radially moving slides, substantially as described and for the purpose specified. 6th. In a machine for making screws, the combination of the threader frame, the spindle mounted within said frame, the threading rollers mounted in radially moving slides in the head of said spindle, the sleeve q, the forked pin r connected with said sleeve and passing through an oblique slot in the threader frame, and mechanism for moving said pin within said slot, substantially as described and for the purpose specified. 7th. In a machine for making screws, the combination of a reciprocating threader having radially moving threading rollers l and forked trip pin r, the lever s having the end which engages said forked pin widened in the longitudinal direction of the machine to correspond with the longitudinal movement of the threader, and mechanism for moving said lever laterally, substantially as described and for the purpose specified. 8th. In a machine for making screws, the combination of the threading rollers mounted in radially moving slides, the sleeve q, mechanism for forcing said sleeve over said slides, and mechanism for adjusting the throw of said sleeve to regulate the depth of thread formed by said rollers, substantially as described 9th. In a machine for making screws, the combination of mechanism for feeding the wire intermittently, a reciprocating threader carriage, and rotary threader mounted on said carriage, substantially as described and for the purpose specified. 10th. In a machine for making screws, the reciprocating threader carriage, the rotary threader mounted on said carriage, and means for bringing said threader into action on the wire during a part of each reciprocation, substantially as described and for the purpose

specified. 11th. In a machine for making screws, the combination of the rotary threader, and a rotary wire straightener formed in the spindle of said threader, substantially as described and for the purpose specified 12th. In a machine for making screws, the combination of the rotary threader, the lever *s* for forcing the threader into action upon the wire, the cam P acting on the lever Q for closing the griping dies, and mechanism for operatively connecting the levers *s* and Q, whereby said levers are operated by the cam P, substantially as described and for the purpose specified 13th. In a machine for heading screws or nails, the combination of the ram having a cylindrical bore, the semicircular tool holders 11 fitted therein and having sockets for the heading tools, and the clamp bolt 4 or its equivalent for securing said tool holders in place when turned axially to any desired position within said cylindrical bore, substantially as described and for the purpose specified. 14th. In a machine for heading screws or nails, the combination of the ram having a cylindrical bore, the tool holders 11 fitted therein and having sockets for the heading tools, mechanism for holding said tool holders in place, and means for adjusting the ram laterally, substantially as described and for the purpose specified, 15th. In a machine for heading screws or nails, the combination of the ram having trunnions 66, the slides 77 within which the ways for said slides are formed, and set-screws 10, 10 for adjusting said parts laterally, the caps being secured to the frame of the machine by holding screws 9, 9, substantially as described and for the purpose specified. 16th. In a machine for heading screws or nails, the combination of a swinging ram having heading tools, both of which radiate from the centre on which said rams swings, mechanism for raising and lowering said ram, and the arm 21 projecting laterally from the ram and acting on a stop having a horizontal surface to guide the ram in a right line, when it is allowed to fall into its lowermost position, substantially as described and for the purpose specified. 17th In a machine for heading screws or nails, the combination of a swinging ram having trunnions 6, 6, the slides 7, 7 moving in ways, and carrying the trunnions of the ram, and mechanism for reciprocating said ram and slides, substantially as described and for the purpose specified. 18th In a machine for heading screws or nails, the combination of the swinging ram mounted in slides, mechanism for reciprocating said ram, and two separate rests for the forward end of the slide acting alternately to hold the ram at different heights, and to guide it in a right line during the forward stroke of said ram, by surfaces which are parallel to said stroke, substantially as described and for the purpose specified. 19th. In a machine for heading screws or nails, the combination of the ram, the angle lever 18 and the cam 17 mounted on shaft B, and having three faces opposed to the end of said angle lever, substantially as described and for the purpose specified. 20th In a machine for heading screws or nails, the swinging ram having the arm 15, with its lower end below the plane in which lies the axis of said ram, the spring or springs 16 connected to the framing or stationary support at one end, while the opposite end of said spring is connected to arm 15, and mechanism for reciprocating and elevating said ram, substantially as described and for the purpose specified. 21st. In a machine for heading screws or nails, the combination of the framing, a ram adapted to move forward in a right line, the toggle arms 14, 14, having their outer ends respectively pivoted to said framing and ram by ball and socket joints, and mechanism for operating said toggle arms, substantially as described and for the purpose specified. 22nd. In a machine for heading screws or nails, the combination of a swinging ram mounted in slides, the crank-shaft, with its axis parallel to the reciprocating movement of said ram, mechanism for operatively connecting said crank shaft and ram, the lever for raising said ram and the cam on said crank-shaft for operating said lever, substantially as described and for the purpose specified. 23rd. In a nail or screw machine, the cutting off levers 24, 24 mounted within the framing on a common centre, substantially as described and for the purpose specified 24th. In a nail or screw machine, the combination of the levers 24, the dies 25, the stop-plates 33 and means for adjusting said dies relatively to the meeting point of said stop plates, substantially as described and for the purpose specified. 25th. The combination of the griping dies, the rotary threader having its axis in alignment with the space between said griping jaws, whereby the wire may pass from the threader into the griping dies, and mechanism for operating said threader and dies, substantially as described and for the purpose specified. 26th. The combination of a threader, the griping dies, the heading ram and mechanism for operating said parts, substantially as described and for the purpose specified. 27th. The combination of a threader, the griping dies, the heading ram, the cutting off dies, and mechanism for operating said parts, substantially as described and for the purpose specified. 28th. In a machine for heading screws or nails, the heading tools 2 and 3 adapted to act successively while the last one of the tools to act on each screw-head is provided with a slot forming rib, substantially as described and for the purpose specified 29th. The combination of mechanism for feeding the wire of indefinite length, a threader carriage mechanism for giving a reciprocating movement to said threader carriage, and threading tools having a radial movement toward and from the axis of the wire and adapted to alternately act upon the wire to form a thread, and to be released from their action, substantially as described and for the purpose specified. 30th. The combination of a ram, having trunnions upon which it swings, and a toggle arm or pitman pivoted or jointed to said ram for moving it forward, said pivot or joint being formed in the axial line with the trunnions on which said ram springs, substantially as described and for the purpose specified.

No. 28,250. Car Axle Lubricator.

(*Boîte à graisse.*)

Rudolph Faas and John Schmidt, Chicago, Ill., U.S., 28th December, 1887 ; 5 years.

Claim.—1st. The combination of the roller E, metal frame D_1 D_2, apron *h*, bevelled bolt *a*, bolt *b*, flat rubbing bar *d*, cover *k*, substantially as and for the purpose hereinbefore set forth 2nd. The combination of the roller E, metal frame D_1, D_2, apron *h*, bolts *a* and *b*, rubbing bar *d*, cover *k*, vertical metallic plate or shield H, bow springs F, substantially as described and shown.

No 28,251. Method of and Apparatus for Preventing the Fraudulent Opening of Safes. (*Manière d'empêcher l'ouverture frauduleuse des coffres-forts et appareil pour cet objet.*)

Stuart C. Munro, London, Ont., 28th December, 1887; 5 years.

Claim.—1st. In apparatus such as described, the combination of a series of discs, having letters or figures marked thereon, with a second series of discs having cam grooves formed on the faces thereof, substantially as described 2nd. The combination with a series of discs having cam grooves on the surface thereof, of a series of pins bent or hooked at their ends, attached to a bar capable of being moved vertically upwards and downwards from the outside of the safe, substantially as specified 3rd. The combination, with a series of grooved discs and pins for operating the same, of a lever for securing the keyhole guard, substantially as specified. 4th. The combination, with a series of grooved discs, of a swing supported bar for covering the edges of the grooves, substantially as specified. 5th. The combination with a series of grooved disks, of a swing supported bar capable of being forced inwards or outwards by cams on the axis of the grooved discs, substantially as specified.

No. 28,252 Electric Call and Alarm Apparatus. (*Appareil avertisseur électrique.*)

James A. Wright, Montreal, Que., 28th December, 1887; 5 years.

Claim —1st. In an electric protective system, the locking of a signal box, any desired point released by any thermostatic or other interference of the electrical condition of protective circuit, substantially for the purpose set forth. 2nd. In combination with a district call box and its circuit, of a key, a protective or local circuit, including magnets, an armature and setting mechanism, for the purpose set forth. 3rd. The combination, with a district call box and its circuit, of a key having a make and brake contact with the main circuit, and a local circuit including a key, two magnets, an armature and a bell for giving a return signal, as set forth. 4th. The combination, with a district call box and its circuit, of a key, a burglar or fire alarm circuit, including two magnets, an armature and a detent for ringing the bell at the central station when the alarm stations are interfered with, as set forth.

No. 28,253. Fire Escape. (*Sauveteur d'incendie.*)

John Matthie, Lindsay, Ont., 28th December, 1887 : 5 years.

ClaiM.—1st. In a fire escape, the combination of the frame A, the drum B provided with the wire rope C coiled thereon, and the brake levers D adapted to bear upon the ends of the drum B, substantially as described. 2nd. In a fire escape, the combination of the frame A, the drum B, the wire rope C attached thereto and coiled thereon, the rollers E, F journalled in the frame A, and the brake levers D adapted to bear upon the ends of the drum B, substantially as described. 3rd. In a fire-escape, the combination of the frame A, the drum B, the wire rope C attached thereto and coiled thereon, the rollers E, F journalled in the frame A, the brake levers D adapted to bear upon the ends of the drum *a*, B, and the sling H, substantially as described.

No. 28,254. Grip for Cable Roads.

(*Déclic pour chemins à câble.*)

Samuel H. Terry, Fulton, Mo , U S., 28th December, 1887 ; 5 years.

Claim.—1st. The combination, with a fixed gripper-supporting plate, of a vertically sliding plate, a grip, composed of two hinged jaws carried at the lower end of said sliding plate, a horizontal cam-bar suspended between said jaws and adapted to open the same, jointed bars or rods attached to said cam bar, a vertically sliding bar having a saddle pivoted to its lower end, and adapted to clasp the grip-jaws, said saddle-carrying bar being connected with the jointed bars that are attached to the cam-bar, a rack carrying side block connected with the saddle-carrying bar, and a pinion for actuating said rack to open or close the gripping jaws, substantially as described. 2nd. The combination, with a fixed gripper supporting plate and a vertically-sliding plate carrying two hinged gripping jaws, of a horizontal cam-bar suspended between the gripping jaws, and having at each end a roller-carrying bracket, a vertically sliding-bar provided with slots and perforations, a saddle pivoted to the lower end of said bar and adapted to clasp the gripping jaws, jointed rods attached to the horizontal cam-bar and provided with rabbeted lugs having pins to engage elongated perforations in the vertically sliding saddle-bar, a swinging arm pivoted in said bar and carrying a locking-pin, a slide arranged in a slot in the saddle-carrying bar, and having at its lower end a cross-head to engage the rabbeted lugs and at its upper end, a cam to disengage the locking pin, and a slotted block supported in the stationary plate of the gripper and provided with a notch to receive said locking pin, whereby the gripping jaws are automatically opened and released from the cable by the contact of the rollers in the brackets at the ends of the horizontal cam-bar, with guides placed in the cable-way at a crossing or elsewhere, substantially as described. 3rd. The combination, with a grip comprising two hinged jaws, of an external saddle, a sliding bar carrying the saddle, a sliding plate, means for lowering the bar and saddle, and a horizontal cam bar between the jaws connected with the sliding bar, and provided with rollers to come in contact with a guide in the cable-way, substantially as described. 4th. The combination, with a stationary gripper-supporting plate, and a vertically sliding plate carrying the cable-gripping jaws, of treadles engaging a pin or lug on said sliding plate to raise or lower the said plate and attached gripping-jaws, substantially as described. 5th. The combination, with the hinged gripping-jaws, of a horizontal cam bar suspended between said jaws and adapted to be actuated to open the same, and a horizontal grooved roller carried in a bracket at each end of said bar and adapted to bear on the cable, substantially as described. 6th. The combination, with the hinged and internally-recessed gripping-jaws, of a longitudinally sliding frame placed in each of said jaws, grip-

ping rollers journalled in said frames, and springs for centering the roller carrying frames, substantially as described 7th. The combination, with the hinged and internally-recessed gripping-jaws, provided with a series of depressions or double-inclined planes, of a longitudinally-sliding frame placed in each of said jaws, gripping rollers journalled in said frames and adapted to ride on the double-inclined planes to grip the cable and springs to centre said frames, substantially as described. 8th. The combination, with the hinged and recessed gripping jaws, having a series of internal depressions and springs set in said depressions, of a longitudinally sliding frame placed in each of said jaws, gripping-rollers journalled in said frames, and springs to centre the roller-carrying frames, substantially as described. 9th. The combination, with the hinged and recessed gripping jaws, of the horizontally-sliding roller carrying frames placed in said jaws, and provided with interlocking teeth, and springs for centering said frames, substantially as described. 10th. The combination, with the recessed and slotted hinged gripping jaws, of longitudinally sliding frames placed in said jaws, gripping rollers journalled in said frames with their pivots or journals extended down into the slots in the bottom of the jaws, and springs to centre said sliding frames, substantially as described 11th. The combination of the stationary plate 1, the vertically-sliding plate 2, the hinged gripping jaws 17, cam bar 45, jointed rods 43, 44, the saddle 18, sliding bar 21 having slot 23, perforations 24 and triangular opening 25, the arm 26 pivoted in said opening and carrying a locking pin 27, the lugs 31 attached to the rods 43 and having pins 32 engaging the perforations 24, the slide 28 having a cam 29 and cross-head 30, the block 36 having slot 35, notch 34 and rack 39 and the pinion 40, substantially as described. 12th. The combination of the stationay plate 1, the vertically sliding plate 2, the hinged gripping jaws 17, the cam-bar 45 having end brackets 47, carrying rollers 49, the hangers 48, carrying rollers 50, the jointed bars or rods 43, 44, rabbeted lugs 31, having pins 32, the saddle 18, vertically-sliding bar 21, provided with slot 23, perforations 24, and pivoted arm 26 carrying a locking-pin 27, the slide 28 having cam 29 and cross-head 30, and the block 36 having slot 35 and notch 34 for receiving the locking-pin, substantially as described. 13th. The combination, with the vertically-sliding plate 2 and the gripping jaws 17 hinged to the lower end of said plate, of a vertically-sliding bar 21, a saddle 18 pivoted to the lower end of said bar and to clasp the gripping jaws, means for locking said bar 21 in a lowered position, a horizontal cam-bar 45 suspended between the gripping jaws, and having end brackets 47, carrying rollers 49, and means for connecting said cam-bar with the saddle-carrying bar and its locking mechanism, substantially as described. 14th. The combination, with the sliding plate 2, having eyes 13, of the gripping jaws 17 provided with eyes 15, 16, the hinge pins 14, the hangers 48 suspended from said hinge-pins and carrying rollers 50, the cam-bar 45 provided with end brackets 47, having a loose connection with the shafts of the rollers 50, the rollers 49 carried by said brackets, the saddle 18, sliding bar 21, means for locking said bar 21 in a lowered position, and means for connecting the cam-bar 45 with the locking mechanism of the saddle carrying-bar 21, substantially as described 15th. The combination of the hinged gripping jaws 17, the vertically movable bar 21 carrying a saddle 18 adapted to clasp said jaws, the horizontal bar 45 suspended between said jaws and provided with wedge-shaped lugs or cams 53, the brackets 47 attached to the ends of said cam-bar and carrying rollers 49, means for locking the saddle-carrying bar in a lowered position, and means for connecting the cam-bar 45 with the locking mechanism of the saddle-carrying bar, substantially as described. 16th. The combination, with the hinged gripping-jaws 17, having recesses 60 and slots 67, of the longitudinally sliding frames placed in said jaws and provided with interlocking teeth 66, the gripping-rollers 56 journalled in said frames with their pivots extending into the slots 67, and springs for centering said frames, substantially as described. 17th. The combination, with the hinged gripping jaws 17, having recesses 60 and springs 62, of the longitudinally-sliding frames 55, having interlocking teeth 66, the gripping-rollers 56 journalled in said frames and the spring 58, substantially as described.

No. 28,255. Combined Latch and Lock.

(Loquet-serrure.)

John C. Craig, Fenelon Falls, Ont., 28th December, 1887; 5 years.

Claim—1st. The combination, with the slide O, the spindle socket H having an arm I and offset J, the pendulum D having an arm F and pivoted to the lock case gravitating weight K, having an arm M, provided with a projection N and pivoted to the lock case, and bolt C pivoted to the pendulum, as set forth. 2nd. The combination, in a combined latch and lock, of the gravitating weight K having post U, pendulum D, bolt B and slide O having inclined notches V, V1, as set forth for the purpose described.

No. 28,256. Combined Suspensory Bandage and Truss. *(Suspensoir-bandage herniaire.)*

Johanna Patten, Crown Point, Ind, U. S., 28th December, 1887, 5 years.

Claim.—1st. The combination of the abdominal bandage formed to fit the abdomen, the hips and the back and having a front aperture and back fastening, the elastic thigh strap attached to the lower edge of the bandage at the back and front, the elastic buttock-straps attached to the back of the bandage and to the back of the scrotal sack attached to the lower front edge of the bandage and provided around its upper end with an elastic draw-string, all substantially as specified. 2nd. The pocket G provided with a lacing string and adapted to receive the pad H, in combination with the bandage, its fastenings and straps and the scrotal sack, substantially as specified.

No. 28,257. Combined Latch and Lock.

(Loquet-serrure.)

John C. Craig, Fenelon Falls, Ont., 28th December, 1887, 5 years.

Claim.—1st. The combination of the gravitating weight 6, pivoted to the lock case and having an arm 8, pendulum 4 pivoted to the lock case, and bolt 3, pivoted to the pendulum, whereby the arm of the weight causes the pendulum to project the bolt when retracted, substantially as set forth. 2nd. The combination, with the case I having post 16, of the slide 12 and dog 11 to the lock the bolt by a key, as set forth. 3rd. In a combined latch and lock, the combination, with the case I having post 16, of the slide 12, dog 11, bolt 3, pendulum 4 and gravitating weight 6 having an arm 8 to engage the pendulum, as set forth.

No. 28,258. Antomatic Fire-Extinguisher.

(Extincteur automatique d incendie)

Joseph D. Swallow and William H. Keeney, Port Alleghany, Penn., U.S., 28th December, 1887, 5 years.

Claim.—1st. The combination of the upright 10 provided with concave top ball 13 supported by the upright, and cord 12 connecting the ball to the trigger, with the trigger 11, hammer 8, main spring 9, piston 7, and bottle 4, substantially as described. 2nd. The combination, with the tank 1, provided with concave perforated diaphragm 3, provided with adjustable brackets 5, of the bottle 4 and its breaking mechanism engaging with the bottle through the top of the generator, substantially as described. 3rd. The combination, with a car of the tank 1 provided with piping leading to the heating and lighting apparatus and having an upright 10, a ball 13 supported thereby, a trigger 11, a cord 12 connecting the ball with the trigger, a hammer 8, main spring 9, a piston 7 and a bottle 4 lying upon a perforated concave diaphragm within the top of the tank, substantially as described.

No. 28,259. Well Cleaner. *(Nettoyeuse de puits.)*

Walter Peay,, Toronto, Ont., 28th December, 1887, 5 years.

Claim.—A well cleaner consisting of two sheet metal vessels, the upper one of which is water-tight and provided with a tilting platform, and stay leading thereto, and made to disconnect from the lower vessel when so required by flange and groove, or other suitable means, the lower vessel being perforated in its widest sides and partially filled with charcoal to act as a filter, the whole constructed and arranged substantially as and for the purpose set forth.

No. 28,260. Incandescent Electric Lamp.

(Lampe électrique incandescente.)

Marshall Wheeler, New York, N. Y., U. S., 28th December, 1887; 5 years.

Claim.—1st. In an electric lamp, the combination of a suitable frame or holder containing an amorphous mass of zirconia, in combination with the carbons arranged in pairs and connected to different batteries, substantially as shown 2nd. In incandescent lamps, the combination of a suitable frame containing a mass of amorphous zirconia, with carbons which have their inner ends surrounded by the zirconia, and whihh are connected to different batteries whereby the currents of electricity meet and pass each other at a common centre, substantially as set forth 3rd. In an incandescent lamp, the method described of heating the zirconia to the point of incandescence, by passing through the carbons, currents of electricity which meet and pass each other at a common centre, substantially as set forth. 4th The carbons C formed in one solid piece, and arranged in relation to each other, substantially as specified.

No. 28,261. Snap Hook. *(Crochet à ressort.)*

The Oneida Community, Community, N.Y., U.S., (assignee of John F. Sears, Clifton, Ont., and Harry E. Kelley, Niagara Falls, N.Y., U. S.), 29th December, 1887; 5 years.

Claim.—1st. A lock snap-hook, comprising a gate pivoted to swing to and from the entrance to the hook, and a lever pivoted on the shank of the hook and engaging the gate to move the same to its open and closed positions automatically with the turning of the lever on its pivot, as set forth. 2nd. In a lock snap-hook, the combination of a gate pivoted to swing to and from the entrance to the hook, a cam projecting from said gate, and a lever provided with a shoulder adapted to engage the aforesaid cam during the movement of the lever, as set forth 3rd. In a lock snap-hook, the combination of a gate pivoted to the shank of the hook, and adapted to open and close the entrance to the hook, a cam projecting from the pivoted end of the gate, and a lever pivoted on the aforesaid shank and formed with a segmental head bearing on the cam of the gate, and terminating with a recess adapted to received the end of the cam, substantially as described and shown.

No. 28,262. Hitching Post. *(Enrénoire.)*

Benjamin G. Wright, London, Ont., 29th December, 1887, 5 years.

Claim.—1st. The combination of tubular post F, chain or tie line B with link P, weight A and circular disk C, attached spring D, caps E, and ornamental sleeve H, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the parts lastly above mentioned, and winter attachment R, substantially as and for the purpose hereinbefore set forth.

No. 28,263. Machine for Harvesting Peas.

(Machine à récolter les pois.)

Tobias Fox, Owen Sound, Ont., 30th December, 1887, 5 years.

Claim.—The combination, with the short lifters B, B and the fingers G, G, of a wheel divider and rakes, substantially as and for the purpose hereinbefore set forth.

No. 28,264. Furnace for Locomotive and Marine Boilers. *(Foyer pour chaudières marines et de locomotives.)*

Absalom Backus, jr., Detroit, Mich., U. S., 30th December, 1887. 5 years.

Claim.—1st. In a furnace and in combination, the fire-box, the in-

closed frame, the arched and side walls supported thereon, the series of clinker-breaking grates, the dumping-grate, the ventilating-grate located in the rear end of the fire-box, the feed-door opening through the fire-box, below the arched wall, substantially as and for the purposes specified 2nd. In combination with the fire-box, the arched-wall, the feed-door opening in said fire-box below the arched-wall, the inclined frame having journalled therein the series of grates 10, the ventilating-grate N located at the rear end of the fire-box and below the feed-door opening, and the mechanism for tilting the grates 10, substantially as specified. 3rd. In a furnace, the combination of the fire-box, the feed-door opening, the arched wall located in the rear end of the fire-box over the feed door opening, the series of grate-bars located below the arched-wall, the ventilating-grate N located below the feed-door opening at an elevation to the series of grate-bars 10, the dumping-grate located in the front end of the fire-box, as and for the purpose specified.

No. 28,265. Churn. (*Baratte.*)

George Backster, jr., and Joseph F. Reiff, Aurora, Ill., U.S., 30th December, 1887; 5 years.

Claim.—1st. In a churn, the combination of the uprights A, transverse bar C secured to the uprights and having a vertical groove *c* therein, the casting D having the vertical arm *d* secured in the said groove, vertical bearings d^2, d^3 and the horizontal bearings F, F in the said casting legs E, E^1 secured to the casting D, horizontal plate G having the vertical shaft H journalled in the vertical bearings, gear wheel H^1 on the lower side of the plate G, shaft I journalled in the bearings F, F and having the crank J on the outer end, and gear wheel K on the inner end meshing with the gear wheel H^1, and the churn body resting on and rotated by the said plate G, substantially as specified. 2nd. In a churn, the combination of the uprights A, transverse bar C having the vertical groove *c* at the centre, the casting D having the vertical arm *d*, ears d^1 on the sides of the said arm bolted in the groove *c*, bearing d^2 at the upper end of the said arm, conical socket bearing d^3 aligned therewith, arm d^4 extending rearwardly from the arm *d*, the leg E secured thereto, horizontal bearings F, F on the end of the curved extension of the said vertical arm *d*, the leg E^1 secured to the extension flanged plate G having a vertical shaft H journalled in the bearing d^2, and bearing at the lower end in the socket d^3, gear wheel H^1 on the underside of the said flanged plate, and horizontal shaft I journalled in the bearings F and having the gear wheel K to mesh with the wheel H^1, and the churn body L to rest on the flanged wheel and rotate therewith, substantially as specified

No. 28,266. System of Electric Distribution. (*Système de distribution électrique.*)

Lucien Gaulard, Paris, France, 30th December, 1887: 5 years.

Claim.—1st. The hereinbefore described art or method of electrical distribution and conversion, which consists in establishing in a closed electric circuit a current of alternate and equal positive and negative potential, producing by the influence of such current an inductive field of alternate polarity, and thereby inducing in translating devices situated in an independent closed circuit traversing such field, a similar alternating secondary current of greater quantity and less potential than the originating or producing current. 2nd. In a system of electrical distribution, an inductorium or converter in which the length of that portion of the conductor traversed by the primary current within the magnetic field created by itself exceeds the length within the same field of the conductor traversed by the secondary current, in combination with a dynamo-electric generator producing alternating electric currents or pulsations of equal potential and duration, and translating devices actuated by said secondary current. 3rd. In a system of electrical distribution, an inductorium or converter in which the resistance of that portion of the conductor traversed by the primary current within the magnetic field created by itself, exceeds the resistance of that portion of the conductor traversed by the secondary current, which lies within said field, in combination with a dynamo-electric generator producing alternating currents or pulsation of equal potential and duration, and translating devices actuated by said secondary current. 4th. In a system of electrical distribution, a dynamo-electrical machine organized for the production of alternate, positive and negative currents, equal to each other in potential and duration, in combination with the primary circuit of an inductorium or converter organized to induce in its secondary circuit alternating currents of lower potential, and greater quantity than those of the primary circuit, and one or more translating devices actuated by said secondary currents. 5th. In a system of electrical distribution, the combination of an inductorium or converter having its primary and secondary circuits constantly closed, a dynamo-electric generator for producing alternating currents of equal potential and duration included in said closed primary circuit, and one or more translating devices included in said closed secondary circuit, substantially as set forth.

No. 28,267. Drill Chuck. (*Toc-toc.*)

Felix C. Larger, Chicago, Ill., U.S., 30th December, 1887; 5 years.

Claim—1st. In a chuck, the combination of a slide cylinder having an annular projection upon its inner surface, and movable upon a socket provided with movable dogs or blocks, as and for the purpose described. 2nd. In a chuck, the combination of a slide cylinder having an annular projection upon its inner surface, and adapted to move upon a socket provided with movable dogs or blocks having bevelled faces, substantially as and for the purpose described. 3rd. In a chuck, the combination of a slide cylinder provided with an annular projection upon its inner surface, having a bevelled edge and movable upon a socket provided with dogs or blocks, substantially as and for the purpose described. 4th. In a chuck, the combination of a slide cylinder, provided with an annular projection upon its inner surface, having a bevelled face and movable upon a socket provided with dogs or blocks having inclined faces, substantially as and for the purpose described. 5th. In a chuck, the combination of a slide cylinder provided with an annular projection upon its inner surface, having a bevelled face movable upon a socket provided with dogs or blocks and a screw which bears against the annular projection, as and for the purpose described 6th. In a chuck, the combination of a slide cylinder, provided with an annular projection upon its inner surface, and with an opening in its face, movable upon a socket provided with dogs or blocks having bevelled faces, substantially as and for the purpose described. 7th. In a chuck, the combination of a slide cylinder, provided with an annular projection upon its inner surface having a bevelled edge, a socket provided with dogs or blocks, and a spiral spring encircling said socket, substantially as and for the purpose described. 8th. In a chuck, the combination of a slide cylinder provided with an annular projection upon its inner surface having a bevelled face, a socket provided with movable dogs or blocks having bevelled faces and a spiral spring encircling the socket, substantially as and for the purpose described. 9th. In a chuck, the combination of a slide cylinder, provided with an annular projection upon its inner surface, having a bevelled face and with an opening in its forward end, a socket provided with an annular flange, and with movable dogs or blocks having bevelled faces and lugs adapted to fit in recesses in the socket, a screw bearing against the annular projection, a hole in the external cylinder for removing said screw, and a spiral spring encircling the socket, substantially as and for the purpose described.

No. 28,268. Fence. (*Clôture.*)

Melbourne Walker, Florence, Ont., 30th December, 1887; 5 years.

Claim.—The support S and rails R, R and W, in combination with the uprights U, U, band B, inclined braces A, A and longitudinal brace L, substantially as shown and described and for the purpose set forth.

No. 28,269. Combined Folding-Bed and Wardrobe. (*Lit garde-robe.*)

Calvin Lockrow, Detroit, Mich., U.S., 30th December, 1887, 5 years.

Claim.—1st. In combination with the upright-frame, the bed-frame having one end pivoted thereto, the hinged bar and supports attached to the free end of said bed-frame, the wardrobe movably attached to the upright frame and having engagement with the bed-frame forming a counter-balance therefor, as and for the purpose specified. 2nd. In combination with the upright-frame having the base-supports B, the bed-frame pivoted at *a*, to the upright-frame, the wardrobe having doors A, A and H, and drawers K, in the front thereof, the plates *n* securing movably the wardrobe to the upright-frame and the mechanism coupling the wardrobe to the bed-frame, as and for the purposes specified. 3rd. In combination with the upright-frame, the swinging bed-frame pivoted at one end thereof, the hinged bar carrying the foot supports attached to the free end of said bed-frame, the rod Z coupled to the hinged-bar and to the upright-frame, the wardrobe, the metal plates *n* coupling said wardrobe to the upright-frame movably, and the mechanism coupling the wardrobe, the swinging bed-frame, as and for the purposes specified. 4th. In combination with the upright-frame, the swinging bed-frame pivoted at *a* thereto, the wardrobe attached to the upright-frame so as to have a vertical reciprocation motion, the swing-board D^2 hinged to the cross-rail S^2 of the bed-frame, the arms R hinged to said board, said arms being movably coupled to the wardrobe, substantially as and for the purpose specified.

No. 28,270. Smokeless Furnace for Generating Steam. (*Foyer fumivore à vapeur.*)

Absalom Backus, jr., Detroit, Mich., U. S., 30th December, 1887: 5 years.

Claim—1st. In a furnace, the combination of the side-walls, the central wall, the arched walls joining the central and side walls, a set of grate bars located under each arched-wall, the furnace front having feed openings above the grate bars, the central and side air flues leading from below the grate-bars into the front end of the retorts, substantially as and for the purposes specified. 2nd. In a furnace and in combination, the side-walls, the boiler, the arched-walls located horizontally below the boiler, the central wall supporting said arched walls, its front end terminating some distance back from the front of the furnace, the inner face of the side-walls having a like termination forming the air-flues leading from the ash-pit to the arched-walls A, the set of grate-bars located under each arched wall upon transverse supports, so as to bring the rear end of the grate-bars on a higher plane than the forward ends, the furnace from having feed-door opening into the retorts and doors opening into the ash-pit, as and for the purpose specified. 3rd. In a furnace, the combination of the boiler, the side-walls having the air flues H^1, H^2, the arched walls located horizontally below the boiler, the central wall supporting said arched-walls, its front end terminating some distance back of the furnace front forming the central air-flue, the set of grate-bars, as specified, the bridge-wall having the rearwardly inclined front, the dumping-grate and mechanism for operating said dumping-grate, the furnace front and supports P, P^1, B^1 meeting the inner face of said front, as and for the purposes specified. 4th. In combination with the grate, a wall of refractory material over the front portion of the grate, and an air-inlet flue opening into the space above and below the grate, substantially as shown and described. 5th. In combination with a boiler, a grate supported beneath the boiler, a wall of refractory material interposed between the boiler, and the front portion of the grate, the air-inlet flues near the front end of the grate having openings both above and below the grate, substantially as shown and described.

No. 28,271. Car-Coupling. (*Attelage de chars.*)

Alexander S. Bailey, Seney, Ga., 30th December, 1887; 5 years.

Claim.—In a car-coupling, the combination of the draw-head A having an opening in the upper side, coupling hook pivoted within the draw-head, and having a bevelled front end and adapted to engage at the end in a slot or socket in the lower side of the draw-head, the pivoted or hinged door or lid B over the opening in the upper side of the draw-head having a slot C therein, the said lid being

adapted to be raised by the hook when a coupling is formed, and to close the said opening in the lowered position, and the cord or chain, connected to the end of the hook and passing through the slot C, as and for the purpose specified.

No. 28,272. Oil Can. (*Bidon à huile.*)

Edward V Runion, Selma, Cal., U.S., 3rd January, 1888, 5 years.

Claim.—1st. An oiler comprising the outer shell A, having discharge tube H and vertical inner flange B secured to its lower edge, and reservoir C having an outer flange depending from the upper edge thereof, and adapted to engage over the flange secured to the shell, substantially as set forth. 2nd. An oiler comprising the outer shell A, having discharge tube H and the upturned inner flange B, the reservoir C having the inwardly-projecting flange E at its upper end, and the outer flange D depending from the said flange E, and adapted to engage over the inner flange of the shell A, the inwardly-projecting flange K in the upper end of the shell A, and the spiral spring arranged between the flanges E, K, substantially as and for the purpose set forth.

No. 28,273. Railway Rail Bracket.

(*Coussinet de rail de chemin de fer.*)

John Waterman and Nelson A. Gray, Villisca, Iowa, U.S., 3rd January, 1888; 5 years.

Claim.—1st. In a railway track, the combination of a main rail bracket spiked to the ties, and bolts connecting said brackets with the guard rail, substantially as set forth. 2nd. A bracket for railroad rails, formed with a head 1 having bolt-holes near its opposite ends, and having the shank 3 united to one end, with the head 1 centrally between the ends of the latter and provided with a longitudinal rib, substantially as set forth.

No. 28,274. Shifting Thill Coupling.

(*Armon de limonières mobiles.*)

George P. Askin, Detroit, Mich., U.S., 3rd January, 1888; 5 years.

Claim.—1st. In combination with the draught bar C, the laterally movable bar L, to which the thills are pivoted, the clips connecting the bars C, L, one of the clips being fixed on the bar L and sliding loosely over bar C, and the detent carried by the movable clip and engaging the draught bar, as set forth. 2nd. The combination, with the draught bar C arranged between the runners and secured at its ends thereto, of the laterally movable bar L connected to bar C, and the thills hinged on bar L, as set forth. 3rd. The draught bar C secured in position, in combination with the laterally movable bar L, clips connecting bars L, C, and detent connected to and carried by the movable clip and engaging the bar C, as set forth. 4th The combination of the runners, and the draught bar having threaded ends passed through the runners, thereby bracing the same, the nuts M, M, the laterally-movable bar L and the clips H, I, substantially as described. 5th. The combination of the draught bar, the clip H, secured thereto, and having the opening *h*, the clip I having the openings *d* and *e*, and the laterally-movable rod L in the remaining opening of clip I and in the opening *h* of clip H, and the thills hinged to said rod, substantially as described. 6th. The combination, with the draft bar C, of the laterally-movable bar L, the thills pivoted thereto, and the hinged sectional clips connecting the bars L, C together, as set forth.

No. 28,275. Lath-Bolt and Picket-Sawing Machine. (*Scierie pour débiter la latte et les piquets.*)

Thomas Manley, Prince Albert, N.W.T., 3rd January, 1888: 5 years.

Claim.—1st. The combination, with the sawing tables 6, 6, of a series of laterally adjustable guide bars 7, intervening the saws and pivoted to drop at one end, and connecting the tables horizontally, and provided with adjustable pins 12, to prevent the saws wabbling and ensure a straight cut, as set forth. 2nd. The combination with the saw tables 5, 6 and lower feed rolls 15, 15, of the upper feed rollers journalled in arms secured to a rock shaft, provided with a gravitating arm and weight, whereby the rollers will yield to the thickness of the stuff to be sawed, and one roller will resist the upward cut of the saws, as set forth. 3rd. The combination, with the saw arbor having a transmitting pulley 28, of the idler pulley 29 having a belt hub 30, pulleys 27, shafts 25, rock-shaft 16, gears 22, 21, 20, and upper feed rollers 19, as set forth. 4th The combination, in a circular gang sawing machine, of the two compression rollers 19 mounted in arms carried by a rock shaft provided with a gravitating arm and geared, whereby the rocking of the shaft will not interfere with the rotation of the compression rollers, as set forth.

No. 28,276. Heating Apparatus for Buildings. (*Appareil de chauffage des bâtiments.*)

Eugene N. Gates, Holyoke, Mass., U.S., 3rd January, 1888, 5 years.

Claim.—1st. A heating apparatus for buildings, consisting of a furnace provided with a fire-box, substantially as described, several metallic water-heating pipes located in said furnace in an inclined position, several radiating coils, a supply pipe connecting each of the said coils, with the higher end of one of said heating pipes, a receiving reservoir having the lower ends of the heating pipes connected therewith, and a return pipe connecting each of said coils with said receiving reservoir, the latter being connected by a suitable pipe with the usual street main, whereby water is supplied thereto, combined and operating substantially as set forth 2nd. The furnace C, several water-heating pipes located in said furnace in an inclined position, several radiating coils a supply pipe connecting each of said coils with the higher end of one of said heating pipes, a receiving reservoir, having the lower ends of the heating-pipes connected therewith, a return pipe connecting each of said coils with said receiving reservoir, a water supply and an air chamber in the same, combined and operating substantially as set forth. 3rd. A hot water heating apparatus, consisting of a furnace, substantially as described, provided with a series of heating pipes extending therethrough, connected by one end with a receiving reservoir common to all, and having their outlet ends each separated from the other extending outside the furnace, several radiating coils, a supply-pipe connected to the outlet end of each of said heating pipes, leading to one of said coils, and a return pipe from each of the latter to conduct water back to said reservoir, substantially as set forth.

No. 28,277. Alarm Signal for Railway Crossings. (*Signal à sonnerie pour traverses de chemins de fer.*)

George D. Rathmann and Christian Rathmann, Blair, Neb., U. S., 3rd January, 1888; 5 years.

Claim.—1st. In a railway signal, the combination, with a rock shaft, of a tripping dog mounted thereon in close proximity to one of the rails, an arm carried by the shaft, a gong and its hammer and connections between the rock-shaft arm and the gong hammer, substantially as described. 2nd. In a railway signal, the combination, with a rock-shaft, of a tripping dog carried thereby in close proximity to one of the rails, an arm carried by the rock shaft, a gong, a lever A upon one arm of which there is mounted the gong hammer, a means for normally holding the other arm in a horizontal position, and connections, substantially as described, between the hammer arm and the arm of the rock shaft 3rd. In a railway signal, the combination, with a rock shaft mounted beneath the bases of the rails, and provided with arms 28 and a projection 31, of a tripping dog mounted between and supported by the arms 28, a counterpoise arranged in connection with the tripping dog, a post 14, an arm 15 carried by the rock shaft in close proximity to the post, a second post 16, a lever A carried by said post and provided with a gong hammer, a spring arranged in connection with the lever, a gong, a supporting wire 25, loops carried by said wire, a wire 27 connected to the lever A and passing through said loops, a lever 16 mounted upon the post 14, and a wire connecting the lever 16 and the arm 15, substantially as described.

No. 28,278. Dust Pan. (*Porte-ordure.*)

Malvina N. Hemenway, Mexico, N. Y., U. S., 3rd January, 1888: 5 years.

Claim.—1st—The dust pan blank described, cut upon the outlines 2, 2 and the inside lines 3, 3, and adapted to be shaped upon the bending lines, substantially as described. 2nd. As a new article of manufacture, a dust pan having the long inclined portion 5, the short inclined portion 6, the horizontal portion 8, the back portion 10, the side pieces 11, 11, 12, 12, the adjacent edges of the side pieces 11, 11, 12, 12, being soldered together, and also the vertical lines of the rear ends of the side pieces 11, 11, and the vertical lines of the back piece 10, as described.

No. 28,279. Stove Oven. (*Fourneau de poêle.*)

Charles Gentle, Hamilton, Ont., 3rd January, 1888; 5 years.

Claim.—In a stove oven, the movable grate 4 working on the rollers 2 in the bottom plate 1, in connection with the lever 3 operated by the crank 14 with the push bar 8 to extend said grate out of the oven, as described and all constructed and operating substantially as herein set forth.

No. 28,280. Road Cart. (*Désobligeante.*)

Orville W. Mumbrue, Homer, Mich., U. S., 3rd January, 1888; 5 years.

Claim.—1st.—The combination, with the shafts, seat bars and seat of a road cart, the springs G secured at their upper ends to the seat bars, and hinged at their lower ends to the cross-bar of the shafts, and the links or bails F, all substantially as described. 2nd. In combination with the shafts, seat bars and seat of a road cart, two springs, one under each seat bar, each spring being bolted at its upper end to the seat bar near the seat, then after forming a return bend projecting forwardly and downwardly, terminating in a hinge at a cross-bar on the shafts, all arranged to operate substantially as described.

No. 28,281. Sectional Water Heater.

(*Calorifère à eau.*)

William Kirkwood, Guelph, Ont., 3rd January, 1888, 5 years

Claim.—1st. Two vertical chambers, arranged parallel with each other and suitably partitioned, horizontal tubes being connected to the walls of and arranged to connect with the interior of one chamber, which is bridged by horizontal tubes of a smaller diameter connected to the walls of, and communicating with, the interior of the other chamber, the said tubes extending into the tubes connected to the wall of the former chamber, so that fluid entering the latter will flow through the larger tubes and find its way through the smaller tubes into the other chamber, substantially as and for the purpose specified. 2nd. Two vertical chambers, arranged parallel with each other and suitably partitioned, horizontal tubes being connected to the walls of and arranged to connect with the interior of one chamber, which is bridged by horizontal tubes of a smaller diameter connected to the walls of, and communicating with, the interior of the other chamber, the said tubes extending into the tubes connected to the wall of the former chamber, so that fluid entering the latter will flow through the larger tubes and find its way through the smaller tubes into the other chamber, in combination with the dome J, into which the said chambers communicate, substantially as and for the purpose specified. 3rd. The tubes D, closed at one end and connected at their opposite open end to the wall *a*, and containing smaller tubes E open at both ends, but connected to the walls *b* at one end, so that the chambers B, C will be connected through the tubes specified, in connection with horizontal partitions formed across the chambers B, C, substantially as and for the purpose specified.

No. 28,282. Seeding Machine. (*Semoir.*)

Peter Hamilton, Peterborough, Ont., 3rd January, 1888; 5 years.

Claim.—1st. A link-chain A arranged to connect the feed-rod of the seed-box B, with the sprocket-wheel C *loosely* journalled on the axle D, in combination with the clutch E adjustably connected to the axle D and operated by the bell-crank G, and connected, as described, to the lever K, arranged substantially as and for the purpose specified, 2nd. A block L connected to the drag-bar M, and having teeth *a formed in it*, as described, in combination with a bracket N having a toothed hub *b*, and secured to the block L by means of the bolt O, as specified. 3rd. A driving-wheel having hub W, and ratchet portion *q* with shoulders x, x_1, in combination with axle D, pin p and spring U adapted to press the ratchet portion q of hub against the pin p, substantially as described and specified. 4th. A link-chain A, arranged to connect the feed rod of the seed-box B with the sprocket-wheel C loosely journalled on the axle, the clutch E adjustably connected to the axle D and operated by the bell-crank G, and connected, as described, to the lever K, in combination with a driving-wheel having hub W, and ratchet portion *q* formed therein, with shoulders x, x_1, which are adapted to engage when the wheel moves forward with the pin *p*, which passes through, and is rigidly attached to the main axle D, together with the spring U also adapted to press the ratchet portion of the hub against the pin *p*, substantially as described and for the purpose specified.

No. 28,283. Mowing Machine. (*Faucheuse.*)

Edward Bartlett, Bancroft, Ont., 3rd January, 1888; 5 years.

Claim.—1st. The combination of the pitman P with the spring S, substantially as described and shown. 2nd. The combination of the pitman P and the spring S, with the coil spring "S" forming a triangle, substantially as described and shown 3rd. The combination of the chain A, with lever L and the cut bar R, substantially as described and shown. 4th. The combination of the foot lever Y with the hand lever X and hinge H, substantially as described and shown. 5th. The combination of the lever L with the foot lever Y, and lever X with hinge H, substantially as described and shown.

No 28,284. Car Heater. (*Calorifère de char.*)

Jorod Tyler, St. Mary, Penn., U.S., 3rd January, 1888; 5 years.

Claim—1st. In a car heater, the combination, with a vessel containing a fire-extinguishing fluid and connected with the heater, of a valve closing the outlet of said vessel into the heater, a spring connected with said rod, an arm secured to said rod, a bolt for locking said arm in position, and a rod extending upwardly from said arm and connected with the wick-shafts of the lamps of the car, substantially as described. 2nd. In a car heater, the combination, with a vessel containing a fire-extinguishing fluid and connected with the heater, of a valve closing the outlet of the said vessel into the heater, a spring connected with said rod, an arm secured to said rod, a bolt for locking said arm in position, a rod extending upward from said arm and connected with the wick shafts of the lamps of the car, and means substantially as described, for unlocking said bolt, as set forth. 3rd. In a car heater, the lever K, the spring K^5 pressing against the short end of said lever, the ball L supported loosely on the long end of said lever, and the bolt J connected with said lever K, in combination with the arm I held in a locked position by said bolt J, as long as the ball L is supported by said lever K, the spring H_3 pressing against said arm I, the rod N connected with said arm I, the shaft O connected by the crank-arm N_1 with said rod N, the crank-arm Q secured to said shaft O, and the plate Q_2 connected by the rod Q_1 with said crank-arm Q, and adapted to close the smoke flue of the heater, substantially as shown and described. 4th. The combination, with the heater A, the casing F surrounding the same provided with suitable doors and having three horizontal partitions F_2, F_3, F_4, forming three separate chambers above the top of the heater of the vessel, within the lowest chamber, provided within an opening leading through the partition into the casing, a valve for said opening, a valve rod extending up through the said vessel and middle partition, a spring on the valve rod, the horizontal lever I connected to the upper end of the valve rod within the middle chamber, the locking bolt engaging said lever, the lever K, connections between said lever and bolt, the spring for the spring for the locking bolt engaging said lever, the short arm of the lever K, the rod K_3 projecting from the long arm of said lever up through partition F_4 into the top chamber, and there provided with a cup K_4, and the ball within said cup, substantially as set forth. 5th. The combination, with a car heater, a surrounding case forming a hot air chamber, and provided with inlet and outlet air pipes having slides, a rock shaft and levers connecting the same with the damper and smoke outlet of the heater, and with the slides in the air pipes of the vessel for containing the fire-extinguishing liquid communicating with the heater, a valve for said opening, a locking bolt and lever for said valve, and a weight releasing, when displaced, the said bolt and lever, and a connection between said lever and the rock shaft, whereby the contents of the vessel may be discharged into the heater, and the damper and smoke outlet thereof, and the hot and cold air pipes be simultaneously closed, substantially as set forth. 6th. In a car heater, the combination, with the casing F and the flues U extending from said casing, of the apertured plates T_3 adapted to slide over the apertures of said flues U, the band T_2 connected with said plates T_3, the lever S_2 connected with said band T, the link S_1 connected with said lever S_2, the crank arm S connected with said link S_1, and the shaft O adapted to receive a swinging motion, substantially as shown and described. 7th The car heater A, the casing F inclosing said car heater A, the flues U leading from said casing F, the fire-extinguishing device G connected with said heater A, and the smoke outlet flue A^2 connected with said heater A, in combination with the ball L, the lever K supporting said ball L loosely on its long end, the spring K^5 pressing against the short end of said lever, the bolt J connected with said lever K, the arm I held in a locked position by said bolt J, the spring H_3 pressing against said arm I, and means substantially as described, for closing the flues U and A^2 and opening the fire-extinguishing device G, so that the fluid in said device passes into the interior of the car heater, substantially as shown and described. 8th. The combination, with the car heater A, of the casing F, the partition F_2, F_3 and F_4 in said casing above the top of the heater, the base F_5 formed on said casing, and the cover F_6 secured to said casing, substantially as shown and described. 9th. The combination, with the car heater A provided with the perforated projection A_2, of the vessel G_1 connected by its outlet G_2 with said projection A_2, the valve G_3 seated on said outlet, the filling-pipe G_6 connected with the interior of said vessel G_1, the valve G_9 in said pipe G_8, and the rod G_{10} for operating said valve G_9, substantially as shown and described. 10th. In a car heater, the lever K, the rod K_3 secured to one end of said lever K, the cup K_4 held on the upper end of the said rod K_3, the ball L held loosely on said cup K_4, and the spring K, pressing against the other end of said lever K, in combination with the vessel for the extinguishing material communicating with the heater, and provided with a valve having a lever connected therewith, the bell-crank lever J, connected by the arm K_1 with said lever K, and the bolt J pivotally connected with said bell-crank lever J_3 engaging the valve-lever, whereby when said ball L is removed from said cup K_4, then said bolt J is withdrawn, substantially as shown and described 11th. In a car heater, the combination, with the vessel G_1 having the outlet G_2, of the valve G_3 adapted to be seated on said outlet G_2, the stem G_4 having a slot G_5 and projecting upward from said valve G_3, the rod H partly hollow at its lower end into which fits said stem G_4, the pin H_2 secured to said rod H and passing through said slot G_5, and the spring H_2 pressing against said stem G_4, thus making said valve G_3 yielding on said rod H, substantially as shown and described. 12th. In a car heater, the vessel G_1 filled with a fire-extinguishing fluid, and the yielding valve G_3 held on the outlet pipe G_2 of said vessel, in combination with the car heater A having the apertured projection A_2 connected with said outlet of the vessel G_1, the apertured slide P_2 held below said projection A_2 and secured to the rod P_1, and the crank-arm P secured to the oscillating shaft O, substantially as shown and described.

No. 28,285. Binding Case. (*Serre-papier.*)

Calvin A. Campbell, Montreal, Que., 3rd January, 1888; 5 years.

Claim.—1st. A "knock down" binding case composed of the "bottom board" A, with wings B and C, and top plate D with side pieces E, F, G, H, all hinged and secured together, as and for the purposes set forth 2nd. A binding case composed of a bottom board carrying clips or seat for bed-plate, in which transferring and holding wires are arranged, and an open box formed of top plate and sides folding over on said bottom plate and outside locking piece, all as herein described 3rd. In combination, a bed-plate having transferring wires and a hold piece hinged to such bed-plate, and carrying receiving wires, both transferring and receiving wires being locked together by contact, all as herein set forth 4th. In combination, a bed-plate, arched tranferring wires fixed rigidly thereto, a hold piece hinged to said bed plate, spring connection acting on such hold piece, and receiving wires carried on same, said transferring and receiving wires locking together at point of contact. 5th. In combination, a bed-plate, arched transferring wires fixed rigidly thereto, a hold piece hinged to said bed plate, receiving wires carried by said hold piece, and spring latch acting on such hold piece to prevent wires becoming unlocked.

No. 28,286. Canal Lock and Method of and Apparatus for Regulating the Same. (*Ecluse de canal et manière de régler les écluses et appareil pour cet objet.*)

Albert L. Blackman, Nashville, Tenn., U. S., 3rd January, 1888; 5 years.

Claim.—1st. In the working of a canal lock, the complete cycle of operations involved in the passing of a boat or vessel from the upper to the lower reach, and consisting of, (a) the opening of the valve F_1 and the admission of the water from the upper reach through the conduits F, and perforated pipes F_2 into the lock, and the closing of the valves F_2 when the lock is filled, (b) the opening of the upper gate B, the admission of the boat into the lock, and the closing of the upper gate B, (c) the opening of the valves J2, and the passing of the water from the lock through the perforated pipes F_2 and conduits F and J_1 to the terraces or tanks J in succession, commencing with the top one, (d) the closing of the valves J_2, the opening of the valves F_4 to equalize the level of the water in the lock and lower reach, and the closing of the valves F_4, the opening of the lower gate B and the passing of the boat out of the lock into the lower reach D_4, the whole substantially in the manner and for the purpose described and illustrated in the accompanying drawings. 2nd. In the working of a canal lock, the complete cycle of operations involved in the passing of a boat or vessel from the lower to the upper reach and consisting of, (a), the admission of the boat of vessel into the lock and the closing of the lower gate B, (b) the opening of the valves J_2, the successive opening of the valves J_4 commencing with the lowest and the return of the water stored in the tanks J by the conduits J_1 and F, and perforated pipes F_2 into the lock and the closing of the valves J_2, (c) the opening of the valves F_3 to make good any loss of water that may have occurred and raise the level of the water in the lock to the same level as that in the upper reach, and the closing of the valves F_3, (d) the opening of the upper gate B, the passing of the boat or vessel into the upper reach, and the closing of the upper gate B, and the whole substantially in the manner and for the purpose described and illustrated in the accompanying drawings. 3rd. The method of passing a large volume of water rapidly and without shock or damage into or out of a canal lock by means of perforated pipes such as F_2, opening into the lock below the surface of the water when at its lowest level, substantially as described and illustrated in the accompanying drawings. 4th. The combination, with a canal lock, of two conduits such as F, one at each side of the lock, connected by perforated pipes, such as F_2, and having their openings into the upper and lower reaches of the canal controlled by valves, substantially in the manner and for the purpose described and illustrated in the accompanying drawings. 5th. The combination, with a canal lock, of one or more conduits, such as F, at the side or sides of the lock, con-

nected with perforated pipes, such as F_2, and having their openings into the upper and lower reaches of the canal controlled by valves, substantially in the manner and for the purpose described and illustrated in the accompanying drawings. 6th. The combination, with a canal lock, of conduits, such as F and F_5, connected by longitudinal perforated pipes, such as F_7, and having their openings into the upper and lower reaches of the canal controlled by valves, substantially in the manner and for the purpose described and illustrated in the accompanying drawings. 7th. In combination with a canal lock, conduits extending parallel thereto from the higher to the lower reach, closed at each end by valves and connected with each other by pipes laid across the bottom of the lock and perforated for the passage of water, substantially as described. 8th. The combination, with conduits, perforated cross pipes connecting the same, and valves for closing the ends of the conduits, of hydraulic cylinders for operating the valves, substantially as described. 9th. The combination, with conduits, valves for closing the same, and hydraulic cylinders for closing the valves, of a hydraulic plump operated by the upper turbine for operating the valve opening cylinders belonging thereto, substantially as described. 10th. The combination, with a canal lock, of two series of tanks, such as J, arranged in terraces rising one above the other, each tank controlled by an independent valve or sluice communicating with the conduit J_1, itself controlled by the valve J_2, the communication between lock and tanks being by a series of perforated pipes, such as F2, the whole constructed and operating substantially in the manner described and illustrated in the accompanying drawings. 11th. In a canal lock, the combination, with the recess B^1 into which the lock gate slides, of a pipe or conduit, such as D_3, extending across and opening into the end of the said recess, for the purpose of flushing out the recess and clearing it of silt, substantially as described and shown in the accompanying drawings. 12th. The method of clearing out the silt from the channels in which the gate B slides, consisting in providing small channels, such as d_2, in the sides of the main channels, and doors, such as b^2, in the bottom of the sides of the gates B in such manner that, when the said doors b^2 are opened, the water will pass by the channels d_2 and doors b^2, through or under the gates B, and remove the silt, substantially as described and illustrated in the accompanying drawings. 13th. A lock gate in the form of a caisson, with sides sloping towards each other from the bottom upwards, arranged to move horizontally across the lock and worked by pinions gearing with racks placed horizontally across the gate, substantially as described. 14th. A lock gate in the form of a caisson, with sides sloping towards each other from the bottom upwards, arranged to move horizontally across the lock and worked by capstan and chain, substantially as described. 15th. A lock gate constructed in the form of a caisson, actuated by hydraulic power and forced out of frictional contact with the supporting wall prior to being operated by water buffers provided with anti-friction rollers, substantially as described. 16th. The combination, with a lock gate constructed to move horizontally under the influence of racks and pinions, of a turbine or other suitable power placed below the level of the water in the upper reach and driven therefrom, and imparting motion to a vertical shaft, bevel wheels and a worm and worm-wheel, substantially as described. 17th. The combination, with a canal lock, of side filling and emptying conduits connected by perforated cross pipes, and side tanks or terraces for storing the water as it leaves the lock for future use, substantially as described. 18th. In combination with a canal lock, a water-saving device consisting of a series of tanks arranged one above another and communicating with an inclined conduit connected with the horizontal filling and emptying conduits, substantially as described. 19th. In combination with water saving tanks, the valves for controlling the communication between the tanks and the inclined conduits, and the bell-crank levers, guide pulleys, chains, and hydraulic cylinders for operating the said valves, all substantially as and for the purpose described. 20th. In an apparatus for regulating and operating canal locks, the pipe arrangement for conducting the water from the upper reach to the hydraulic cylinders, and turbines employed for working the valves, and the lock gate consisting of pipe H_1 for feeding the valve cylinders H, pipes C1 and D_1, d d_1 and I for feeding the turbines C and valve cylinders F_5, J_3 and L, and the discharge pipes D_2 and D_3, substantially as described and shown in the accompanying drawings. 21st. A system of apparatus for regulating canal locks, comprising side or end conduits extending from the higher to the lower reach of the canal, such conduits being connected by perforated cross pipes opening into the lock valve, operated by hydraulic cylinders for controlling the flow of water into or out of lock, floating lock gates worked by turbines and side tanks, or terraces with valves worked by hydraulic cylinders, the whole operating substantially as and for the purpose described. 22nd. The combination, with a caisson lock gate, of doors b^2 operated by levers at the top of the caisson, for the purpose of passing water through the gate to remove the silt, substantially as specified. 23rd. The combination, with the lock gate, provided with means for passing the water through or under it, of channels d^2 formed in the lock bottom at each side of the channel in which the gate works, substantially as and for the purposes specified. 24th. The combination, with the recess B^1 in which the lock gate gate is received, of a pipe D_3 opening into the end of the recess B^1 for the purposes of flushing out the silt, substantially as specified.

No. 28,287. Elevator. (*Ascenseur*)

Thomas Crispin, Detroit, Mich., U.S., 3rd January. 1888; 5 years.

Claim—1st. In an elevator, the combination, with the carriage, of the cables which are attached to it and pass around suitable guiding pulleys, with the flexible racks which are also attached to the carriage and pass around suitable pulleys, and are connected to the cables, substantially as shown. 2nd. The combination of the grooved guides A, the carriage B, the flexible racks C, angular guiding pulleys E, cables D, pulleys G, and the driving mechanism, substantially as shown and described.

No. 28,288. Bellows-Package for Distributing Powder. (*Paquet-soufflet pour distribuer la poudre.*)

Maximilian Ernst, Cleveland, Ohio, U.S., 3rd January, 1888, 5 years.

Claim.—1st. A bellows-package for distributing pulverized material, the same having ears or finger-pieces on the sides thereof, and a discharging orifice made at a corner of the package, substantially as set forth. 2nd The combination, with a package and finger-pieces, substantially as indicated, of a line marked at a corner of the package, to indicate where the corner is to be cut off to form a suitable discharging-orifice, substantially as set forth.

No. 28,289. Radial Sawing Machine.

(*Scierie à scie ronde.*)

The Hodge Manufacturing Company, (assignee of Isidore Valier Roy), Mishawaka, Ind., U.S., 3rd January, 1888, 5 years.

Claim.—1st. A saw and saw-table relatively movable, combined with a gauge-block permanently fixed to said table near the plane of the saw, and movable gauge-blocks adjustable on said table along fixed lines oblique to the plane of the saw, and as to said permanent gauge to adapt them to the peripheral curvature and length of segments, substantially as set forth. 2nd. A saw B and a saw-table C relatively movable, combined with the gauge block F permanently fixed to said saw-table, and the movable gauge blocks G and H, and grooves b, c, wherein said blocks are separately adjustable along fixed lines oblique to the plane of the saw, to adapt them to gauge the wooden segments I, to cause said saw to cut the ends of the same radial to the peripheral curve and to the proper segmental length, as set forth. 3rd. The movable saw-table C, provided with the fixed gauge F, and the gauge-groove oblique to the plane of the saw, said groove being provided with a series of pits k, k equally spaced, combined with an adjustable gauge-block fitted to move in said groove, and provided with the pointed set-screws h.

No. 28,290. Art or Process of Manufacturing Horse Collars, Saddles, Cushions, etc. (*Mode de fabrication des colliers de cheval, selles, coussins, etc.*)

Ambrose B. Coleman, Ottervillo, and John W. Lang, Toronto, Ont., 3rd January, 1888; 5 years.

Claim.—1st. The art or process of making horse collars, cushions, saddles and many things in the line of upholstery and similar articles, constructed in accordance with the successive steps, of forming a blank or bag of felt, or web, or other fibrous material, having fulling properties of a large degree, filling said blank or bag with fibrous material having fulling properties of a lesser degree than said blank or bag, treating said filled blank in a fulling machine, shaping the article thus fulled on a block, and drying and hardening the same, substantially as set forth and described. 2nd. The art or process of manufacturing horse collars, saddles, cushions, and many things in the line of upholstery and similar articles, by first shaping or forming the portion of the article which has little or no fulling properties, then covering the same with fibrous material having fulling properties in a large degree, treating the article so formed and covered in a fulling machine, substantially as and for the purpose hereinbefore set forth and described.

No. 28,291. Device for Holding and Guiding Screw Blanks. (*Appareil pour saisir et guider les ébauches des vis.*)

The American Screw Company, (assignee of Charles D. Rogers), Providence, R.I., U.S., 3rd January, 1888; 15 years.

Claim.—1st. The combination, with suitably mounted and operated forming-dies, one of which may be stationary, of a combined blank-holder and guide consisting of a fixed plate, and a pivoted lever portion mounted on a carrier, whereby a blank is maintained in position parallel to the adjacent faces of the dies, substantially as specified. 2nd. The combination, with two suitably mounted thread-forming dies, and mechanism for operating the same, of adjustably mounted guide plates and a pivoted lever adapted to co-act with said plates, by means of which a screw-blank or rod is maintained parallel to, and between the working faces of the said dies, substantially as hereinbefore described 3rd. In a machine of the class hereinbefore referred to, the combination, with two oppositely mounted and operated thread-forming dies, of adjustably mounted plates, as H, H_1 and H_2, a pivoted lever, as L, and a carrier to which said plates are secured, arranged and adapted to maintain a blank in position parallel to, and between the working faces of said dies, substantially as shown and specified. 4th. In a machine for rolling or impressing screw-threads into a blank, the combination, with the suitably mounted and operating threading dies, of a screw blank guide mounted to travel between said threading-dies, and mechanism for operating the blank guide, substantially as described and for the purpose set forth. 5th. The combination, with the thread-forming dies mounted to impress a screw-thread into a screw blank, of the blank guide hereinbefore described, provided with means for adjusting the same to different sizes of blanks, and mechanisms for imparting a reciprocating movement to said guide, substantially as shown and for the purpose specified. 6th In a screw-threaded machine of the class hereinbefore described and shown, the combination, with the stationary thread-forming die D, the oppositely mounted travelling thread-forming die D_1, and means for reciprocating the same, of a carrier C, means for reciprocating the carrier, and the blank guide adjustably secured to said carrier, substantially as and for the purpose set forth. 7th. The combination, with the stationary thread-forming die D having an irregular or cam-shaped upper surface, as n_1, n_4, of the guided carrier C, means for reciprocating the carrier, and the screw blank guide consisting of plates H, H_1, H_2, and pivoted lever L adjustably secured to the carrier, substantially as shown and hereinbefore set forth. 8th. The combination, with the suitably mounted thread-forming dies D, D_1, a block n secured to the die D, and the guided reciprocating carrier C, of the notched front and rear plates H_1, H, adjustably secured to said carrier, an adjustably secured plate H_2 adapted to limit the upward movement of the blank, and the pivoted two-arm lever L adapted to simultaneously engage the block n and the screw blank, all con-

structed, arranged and and operating substantially as shown and for the purpose hereinbefore set forth. 9th The combination, with the movable thread forming die D_1, the stationary die D having an attached block n, and the carrier C having the screw blank holding plates H, H_1, H_2 adjustably secured thereto, of the two-arm lever L pivoted to the carrier, having its front arm l^6 engaging the block n at the same time that its other arm engages the lower portion of the screw blank 10th. The plates H_1, H, each having the adjacent edges or ends e adapted to receive a screw blank, and means for adjustably securing the blanks to a carrier, substantially as shown and set forth. 11th. The combination, with the adjustably mounted plates H_1, H adapted to receive a screw blank between their adjacent ends, said plate H further having its front lower corner cut away, as at e^6, of the pivoted two arm lever L having the lower portion of its vertical arm adapted to rest against the edge e_5 of the plate H, prior to the completion of the screw-thread.

No. 28,292. Self-Adjusting Die for Screw Making Machines. *(Filière mobile pour machines à faire les vis.)*

The American Screw Company, (assignee of Charles D. Rogers), Providence, R.I., U.S., 3rd January, 1887, 15 years.

Claim.—1st In a screw-threading machine, the combination, with a mounted die for rolling screw-threads, of a follow die mounted, substantially as described, to automatically adjust itself in a direction parallel to the axis of the screw or blank while being acted upon 2nd In a screw threading machine, the combination, with a reciprocating thread-forming die, of a normally stationary follow die mounted to vibrate parallel to the axis of the screw or blank, while being acted upon, and an elastic or yielding support for the latter named die, substantially as hereinbefore described. 3rd. The combination, with a thread forming die mounted to reciprocate, of a follow die, an adjustably mounted holder having the latter die secured thereto, a yielding support for said holder, and stops for limiting the movement of the holder and die in a direction parallel to the axis of the screw or blank, substantially as hereinbefore described and for the purpose set forth.

No. 28,293. Method of Forming and Screw-Threading the points of Wood Screws. *(Manière de former et fileter les pointes des vis à bois.)*

The American Screw Company, (assignee of Charles D. Rogers), Providence, R.I., U.S., 3rd January, 1888, 15 years.

Claim.—1st. Grooved dies for rolling the threads on screws, each die having a portion of its working face formed to first reduce and elongate the point portion of the screw-blank to a symmetrical shape by an ungrooved bevelled surface, and then to roll a screw-thread on said point, the latter thread being a continuation of that simultaneously produced on the body of the screw. 2nd. The combination, in a screw threading machine, of two grooved dies, one of which may be stationary for rolling the threads on screws, each die having a portion of its bevelled working face ungrooved, to reduce the point of the screw-blank to a symmetrical shape, and then by means of ribs and grooves formed in the succeeding portion of the said bevelled surface, to roll a screw-thread on the point of the screw. 3rd. The combination of a pair of thread forming dies, each having a bevelled portion of its working face longitudinally ungrooved, to first shape the point of the blank, and then, by means of grooves formed in the continuation of said ungrooved portion, to roll a screw-thread thereon, and a cutting edge adapted to sever superfluous metal from the tip of the screw.

No. 28,294. Seeding Boot and Attachment Therefor. *(Dent de semoir en ligne.)*

John F. Keller, Shepherdstown, W. V., U. S., 3rd January, 1888; 5 years.

Claim.—1st. A seeding boot, which, upon its rear inner surface, is provided with a projecting seed-deflector or spreader and tube protector, as described. 2nd. A seeding boot which is provided upon its rear and upon its front inner surface with an overhanging deflector or spreader and seed-tube protector, the front deflector being in a lower plane than the rear deflector, whereby portions of the granular material are deflected, first, from rear to front, and then from front to rear, and are thus widely scattered, substantially as specified. 3rd. A seeding boot, which, upon the sides of its discharge opening, is provided with a vertically adjustable guard and regulator, whereby coarse substances are turned aside from the furrow, and whereby a graduatable opening is provided below the lower extremity of such guard at each side of the boot, through which the finer portions of the soil are permitted to fall inwardly upon the granular material, as it is deposited in the tooth furrow 4th The combination, with a seeding boot, of an adjustable guard and regulator, which is applied upon the lower rear portion of the boot, such guard and regulator being so arranged that a lateral opening is afforded behind the rear edges of the drill-tooth at each side and near the point thereof and directly below the lower extremity of the guard and regulator, substantially as described and for the purposes set forth. 5th In combination with a seeding boot, the described guard and regulator, consisting of a central upper portion, which is perforated for vertically adjustable attachment to the boot, and lower side portions which constitute rearward continuations above the lower extremity of the tooth thereof, and adapted to graduate the dimensions of the lateral openings of the same, substantially as and for the purposes specified. 6th. The combination, with a seeding boot, of the described bifurcated guard and regulator, consisting of body portion D_1, having slot d_2, and lower portion D_2 divided to form rearwardly-extending wings d and d_1, substantially as shown and described. 7th. The combination, with a seeding boot, of a vertically adjustable guard, and a pivotally attached crushing and covering roller, the roller being mounted upon the guard and adjustable therewith, substantially as described. 8th. The combination, with a seeding boot, of a vertically adjustable guard mounted upon the rear portion of the boot, and a pivotally attached spring actuated crushing roller, the roller and its spring being mounted upon the guard and adjustable therewith in relation to the seeding boot and its tooth. 9th. The combination, with a seeding boot, of a pivotally attached vertically adjustable and yielding crushing roller, substantially as and for the purposes described. 10th. The combination, with a seeding boot, of a pivotally attached vertically-adjustable spring actuated crushing roller. 11th. The combination, with a seeding boot, of a rear guard and regulator and a pivotally attached and yielding crushing roller. 12th. The combination, with a seeding boot, of a guard and regulator, and a pivotally attached, vertically adjustable and yielding crushing roller. 13th. The combination, with a seeding boot, of a vertically adjustable guard and regulator D, a roller support pivoted upon the adjustable guard, a roller journalled in the lower portion of the pivoted support, and a spring which engages the body of the support and operates to return the roller to its ordinary position when it has been moved therefrom, substantially as described. 14th. The combination, with a seeding boot, of a guard and regulator, which is vertically adjustable upon the seeding boot, and a roller support, which is vertically adjustable upon the adjustable guard. 15th. The combination, with the seeding boot A, of the guard and regulator D having the wings d and d_1 and the drill tooth A_1, such tooth projecting laterally outward beyond the wings d and d_1, and serving as a shield therefor, as described. 16th. The combination, with the seeding boot A, of the drill tooth A_1 the side edges of the tooth engaging the corresponding portions of the body of the boot, and the central portion of the tooth being separated from the corresponding portion of the body of the boot, as set forth, whereby, as the securing bolt is tightened, the tooth is held upon the boot by a spring action, as described. 17th. The combination, with the seeding boot A, of the adjustable guard and regulator D secured thereto, the engaging face of the guard being recessed, as described, so that along the central portion of the coincident surfaces of the boot and the guard an open space is left between the two parts, whereby the same, when the securing bolt is tightened, are held together as by spring action, and whereby abrasion of the guard is confined to the outer edges thereof, substantially as set forth.

No. 28,295. Machine for Cleaning and Decorticating Grain, etc. *(Machine à nettoyer et décortiquer les grains, etc.)*

Gustav A Buchholz, Frankfort-on the-Main, Germany, 3rd January, 1888; 5 years.

Claim.—1st. In a decorticating or cleaning machine, the combination of the disks, having means for rotating them, substantially as described, and casings surrounding the circumference of said disks and adapted to receive material therefrom, substantially as set forth. 2nd. The combination of a main shaft, a series of disks carried thereby, and a series of casings surrounding the circumference of said disks, substantially as and for the purpose set forth. 3rd. The combination of disk c, grooved, supported and operated, substantially as set forth, and casings d surrounding the circumferences of said disks, substantially as and for the purpose set forth 4th. The combination of shaft a, platforms or shoulders b, disks c supported on said platforms or shoulders, and having radial grooves on their upper surfaces and casings d, arranged substantially as and for the purpose set forth. 5th. The combination, of the grooved disks c and covers e, means for supporting and operating the same, and casings d surrounding the circumferences of said disks and lids, substantially as set forth. 6th. The combination of the disks c, supported and actuated substantially as set forth, casings d surrounding the circumferences of said disks, and covers u above said casings, substantially as and for the purpose set forth. 7th. The combination of a shaft a, a series of disks supported thereon, a series of casings surrounding the circumferences of said disks, and a series of shafts for conducting the material from the circumference of one disk to or near the centre of the disk below, substantially as set forth. 8th The combination of the disks c, shaft a, casings d surrounding the circumferences of said disks, chutes h for conducting the material from the circumference of one disk to or near the centre of the disk below, and on its upper portion a husk delivery apron i arranged substantially as set forth. 9th. The combination of the shaft a, disks c supported thereon, casings d surrounding the circumferences of said disks, flanged rings e receiving said casings, and pillars f having seats or flanges g supporting said rings, substantially as and for the purpose set forth. 10th. The combination of the feed tube or cylinder r and feed tube or cylinder R, with lever l connected to said tube or cylinder R and adjusting screw m for operating said lever, substantially as set forth. 11th. The combination of telescopic feed tubes r, R, and lever for operating one of said tubes, a rod for operating said lever, and a spring catch for holding said rod in any desired position, substantially as set forth. 12th. The combination, with the feed tube or cylinder, of two tubes for feeding grain and sand thereto, substantially as set forth. 13th. The combination of centrifugal disks c, casings d, surrounding the same circumferentially, means for operating said disks and for feeding thereto the material to be cleaned or decorticated, and means for feeding a quantity of sand to said disks with the material to be cleaned or decorticated, substantially as set forth. 14th The process of cleaning or decorticating, which consists in feeding into the cleaner or decorticator a quantity of sharp sand with the material to be cleaned or decorticated, and subsequently separating out the sand, substantially as set forth. 15th. The combination of a series of shafts a, each carrying a series of disks c, surrounded each by a casing d, a common frame for supporting all the said shafts and casings, means for operating all of said shafts, and a common feed-box having tubes for feeding all of said disks with material to be cleaned or decorticated, substantially as set forth.

No. 28,296. Manufacture of Bottles, etc., in Glass and Machinery Connected Therewith. *(Fabrication des bouteilles, etc., de verre et machinerie pour cet objet.)*

Howard M. Ashley, Ferrybridge, Eng., 3rd January, 1888; 5 years.

Claim.—1st. The art of manufacturing glass bottles and other glass hollow ware, by first forming a parison (or partly-formed bottle) of molten glass in a parison mould (which also acts as a measure for the required quantity of glass, and is distinct from the finished bottle mould) and forming in the said parison by the action of a punch, a cavity, said punch being hollow and capable of opening to admit air, steam or gas into the cavity when required, then by removing the parison mould and reversing the position of the parison and while it is suspended at the collar end of punch, enclosing the parison in the bottle mould communicating with an air pump or exhauster, or steam or gas generator, and blowing it into the form of a bottle corresponding with the inside of the mould, the air, gas, or steam being admitted through the hollow or duplex punch, or by withdrawing the punch from the parison and enclosing the bottle mould in a bell or receiver, and exhausting the air therefrom, the parison is expanded to the shape of the mould by the pressure of the atmosphere which passes into the cavity formed by the punch. 2nd. Apparatus for the manufacture of bottles and other hollow ware in glass, consisting, firstly, of a parison mould for measuring the quantity of, and for giving the first shape to the molten glass, which in this form is called a parison, secondly, a duplex punch, with a loose collar surrounding it, through which the punch is passed into the said parison and forms a cavity therein, thirdly, a mould for giving the final shape to the bottle, open at both ends, and so constructed as to free the finished bottle, and having a stopper to close the end of the mould, where the bottom of bottle is formed, an exhaust chamber surrounding the mould, the interior of which communicates with it, and an air pump or other exhausting apparatus, or in lieu of air pump or exhauster, any apparatus by which steam or gas can be substituted for air. 3rd. In apparatus for the manufacture of bottles and other hollow ware in glass, the combination of parison mould L, duplex punch N, O, P, Fig. 2, bottle mould proper A, bell or exhauster C with true plate G, arms B and springs D or their equivalents, stopper F, exhaust pipe J, with suitable exhausting apparatus connected therewith, or with any suitable apparatus for injecting air, steam, or gas through punch N, O, P, as shown and described. 4th. The combination, with a bottle mould, or like mould, for glass hollow-ware, of a fixed or movable hollow punch having a valve or plug, for the purpose specified and substantially as described and shown in Fig. 2. 5th. In the manufacture of bottles and like hollow ware in glass on the exhaust system, the combination of the mould A, or like mould, with an exhausting apparatus, for the purpose specified. 6th. In apparatus for the manufacture of bottles and other hollow ware in glass, a pivoted vertically revolving table or frame for carrying either the parison mould or the bottle mould with its appurtenances, as and for the purposes described 7th The pivoted revolving table R, with slides U, U, to which parts of mould A are secured, as shown and described. 8th. The pivoted revolving table R, with slides H, H1, carrying parts of true plate or collar G, as shown and described. 9th. In apparatus for the manufacture of bottles and other hollow-ware in glass, a pivoted horizontally revolving frame constructed for any number of tables or mould-carriers R, to be pivoted thereto as shown and described. 10th. The combination of the horizontally revolving frame mounted on hollow axis, as herein described, and having passages in its framing communicated with by an air or gas pump or steam generator through such hollow axis, tables R, pivoted as shown to said revolving frame, and the moulding or bottle-making apparatus proper, carried on such table R, also having passages communicating with those above mentioned and with the exhaust chamber C, or with the duplex punch N, O, P, of the moulding apparatus, as shown and for the purposes described. 11th. The combination of parison mould L, blow-pipe M, on which mould L is fitted, hollow punch N, with opening O in its face and slot in its side, and apertures communicating with blow-pipe M for the admission of air, steam, or gas, and plug or rod P with a projecting pin in its side working in said slot in punch N, all as and for the purpose described. 12th. In the manufacture of bottles and other hollow-ware in glass, the use of a crucible or vessel, in which molten glass is placed and retained in the furnace until required, and from which it is afterwards poured into the mould for the purpose described. 13th. In the manufacture of bottles and other hollow ware of glass, causing the molten glass to flow from the tank through a closed conduit into the parison mould by exhausting the air therefrom, for the purpose specified. 14th. The combination of a true plate made in one or more parts, with a bottle mould or parison mould, or like mould, for the purpose specified and substantially as described and shown. 15th. In the manufacture of internally-stoppered bottles, such as those known as Codd's Patent, I claim the art or process of inserting the glass ball or stopper, by forcing it through the lip of the bottle, while the glass of the finished bottle is in a plastic condition, for the purpose specified and as described. 16th. A glass bottle or other article of glass hollow ware made or produced by the process hereinbefore described.

No. 28,297. Metallic Packing.

(*Garniture métallique*)

William E. Brockett and Frederick G. Brockett, Park, U. T., U.S., 3rd January, 1888; 5 years.

Claim.—1st. The gland-like packing ring or follower F, having a lubricant holding groove e in its inner peripheral portion, in combination with the fractional packing rings, composed of independent packing blocks D, D1, having sloping backs and grooves or recesses e in their inner surfaces, the lubricating material *f* and the stuffing box A of varying tapering construction on its interior, substantially as described. 2nd. The combination, with the internally tapering stuffing box A, and its ring or base E, of the packing blocks D, D1 constructed to leave angular spaces b between them, and the lubricating material or packing *f*, substantially as described. 3rd. The combination, with the stuffing box A, of the axially divided ring follower F, the similarly divided tapering lining or interior portion *h* of said box, the correspondingly divided conical ring E, and the packing blocks D, D1, arranged in series between the follower and ring to break joint and form spaces between the blocks of each series for the packing *g*, essentially as specified.

No. 28,298. Faucet. (*Robinet.*)

George W. Aldrich, Brooklyn, N.Y., U.S., 3rd January, 1888; 5 years.

Claim.—The combination of the outlet or delivery section B, having an internal annular shoulder, and the freely revoluble perforated or spider-like valve support resting thereon, with the inlet section A to which the section B is adjustably connected, as described, and the flexible ball C resting upon said freely revoluble perforated seat or support, whereby, when the outlet section is being adjusted toward the inlet section and the ball brought over the open end of the latter to close it, said perforated valve seat or support will revolve and wear and the ball be reduced, substantially as set forth.

No. 28,299. Air-Heating Apparatus.

(*Calorifère à air.*)

Wright D. Smith, Detroit, Mich., U.S., 3rd January, 1888; 5 years.

Claim.—The combination, in a hot-blast furnace, of the box A enclosing steam coils, with a disk fan with its axis parallel with the length of said box, and a flaring communication between the fan case and box, whereby the centrifugal force of the fan will drive the air into all parts of the box, substantially as and for the purpose specified.

No. 28,300. Combined Saw-Set and Gauge.

(*Jauge tourne à gauche.*)

Thomas McGregor, Brussels, Ont., 3rd January, 1888; 5 years.

Claim.—In a combined saw-set and gauge, the combination of the body A provided with handle, and having slits in its edges, of the gauge pins B disposed triangularly upon the underside of said body, one or more tapped holes or perforations C1 in said body adapted to receive a screw, and the thumb-screw C adapted to move snugly in one of the holes C1 and project at the side where the gauge pins B are situated, substantially as set forth.

No. 28,301. Car-Coupler. (*Attelage de chars.*)

John T. Haugh, Essa, Ont., 3rd January, 1888; 5 years.

Claim.—1st. A tongue D pivoted near the mouth of the draw-head B and bent, substantially as shown, so as to form a latch, as indicated, in combination with the vertically-operating frame E, actuated by the spring F, substantially as and for the purpose specified. 2nd. A vertically-operating frame E, having a cross-bar *e* formed in it and actuated by a spring F, a tongue D pivoted at *b* near the mouth of the draw-head B, and bent, substantially as shown, so as to extend over the pin *a*, in the frame E, in combination with the link C, arranged substantially as and for the purpose specified. 3rd. A vertically-operating frame E, having a cross-bar *e* formed in it, and actuated by a spring F, a tongue D, pivoted at *b* near the mouth of the draw-head B, and bent, substantially as shown, so as to extend over the pin *a* in the frame E, in combination with the link C, arm H connected to the frame E and operated by the rod G, substantially as and for the purpose specified.

No. 28,302. Snow Plough. (*Charrue à neige.*)

Edwin Payne, Oxbow, N.Y., U.S., 6th January, 1888; 5 years.

Claim.—1st. In a rigid snow plough having a horizontal knife, snow dividing prow and lateral conduits for conveying the snow upwardly and outwardly from the machine, hinged scrapers *d d* and *f f*, outwardly and inwardly movable, and arranged fore and aft of the discharge openings of said conduits, substantially as described. 2nd. In a snow plough having a dividing prow and knife, lateral conduits armed with knives extending rearwardly and outwardly, with outward edge and inside bevel, substantially as described. 3rd. In a snow plough with upwardly inclined conduits, provided with vertical inner walls, horizontal ceilings and downwardly, laterally slanting floors, and combined with scrapers projecting laterally beyond conduits, the knives I with outward edge and inside bevel, substantially as described. 4th. The combination, in a snow plough, of vertical and horizontal cutting knives, as described, snow dividing prow, elevating conduits and scrapers, the false conduits situated above the elevating conduits and provided with downwardly and outwardly slanting floors, substantially as described. 5th. The combination, with the upwardly and rearwardly inclined conduits, and means for dividing the snow into them, of the laterally projecting and hinged moving scrapers *d d* and *f f*, to remove the top surface, and the snow beyond the cut made below, substantially as described. 6th. The combination, with the upwardly and rearwardly conduits, snow-dividing prow, laterally overhanging hinged movable scrapers provided with means of outward and inward movement, to remove the top surface of the snow from the cut made below, and providing for backing, substantially as described. 7th. The knives *i* extending laterally beyond the conduits, and sheathing *g* overhanging the sides of the plough to give clearance for the same, in progressing through the snow, by having outward edges and inward bevel, in combination with the prow and the laterally open conduits throughout their lengths, substantially as described.

No. 28,303. Veterinary Lancet.

(*Lancette de vétérinaire.*)

Isaiah C. Little, Williamstown, Vt., U.S., 6th January, 1888; 5 years.

Claim.—1st. The combination, with a lance of a pressure plate, said pressure plate being attached to a bar sliding in ways and having a spring applied to said pressure plate, to resist the pressure upon said pressure plate, as described. 2nd. The combination, with a cutting blade or blades, of a pressure plate having a sliding motion along the cutting blades, a spring applied to said plate to resist the pressure thereon, and an adjusting screw to limit the motion of the plate, whereby it forms a gauge to regulate the depth of the cut, as described. 3rd. The combination, with the cross-bar C, rod A and handle B, of plate D having one or more fangs or blades, said plate being adjustable by means of the slots e and screws *a*, as described.

No. 28,304. Photographic Shutter.

(Volet photographique.)

Charles D. Durnford, Edinburgh, Scotland, 6th January, 1888; 5 years.

Claim.—1st. In combination with a photographic lens, a single reversible shutter opening upwards and outwards as a flap, and descending as a slide, all substantially as herein set forth. 2nd. In combination with the frame of a photographic shutter, the shutter B with flexible part B^1 and roller B^2, all as and for the purposes set forth. 3rd. The combination, with a photographic lens, of a frame carrying a single reversible shutter operated by a tension spring, all substantially as herein set forth. 4th The combination, with the frame and reversible shutter with tension spring, of the lever G with catch G^2, as and for the purposes described. 5th. The combination, with the frame A, and shutter B, of the lever G with arm G^3, and catch G^4, and stop H, all as and for the purposes described.

No. 28,305. Band Cutting and Feeding Mechanism for Thrashing Machines. *(Appareil à couper les harts et alimenter les machines à battre.)*

Alexander McVeety, Howard, Minn., U. S., 7th January, 1888, 5 years.

Claim.—1st. The combination, in a machine of the class described, with the slotted feed-board 6 and the feed-arms 14, the crank-shafts 18 and 28, arranged at opposite sides of the feed-board 6, the carrying arm 22, secured upon said crank-shafts, and the knife 24 carried by said arm 22, substantially as described. 2nd The combination, with the feed-table 6, of revolving crank-shaft 18, and the oscillating crank-shaft 28, and the band-cutting knife 24 and its supporting arm having its ends mounted upon said crank shafts, substantially as described. 3rd. The combination, with the feed-board, the feed-arms 14 and the band-cutting knife, of the pivoted table 2, the lever 30, connecting rod 32 and crank 12, substantially as described.

No. 28,306. Sectional Radiator.

(Distributeur de chaleur.)

David L. Dwinnell, Montreal, Que., 7th January, 1888; 5 years.

Claim.—1st. A sectional radiator formed of a top chamber open throughout its length, bottom chamber divided by transverse diaphragm, and having an opposite end, the inlet and outlet and vertical connections between said chambers, all cast in one, as and for the purposes described 2nd. In a sectional radiator and in combination, an open top chamber, a bottom chamber divided transversely, connections between same cored out, and pipes passing up through such connections and secured to top and bottom plates of radiator, all as and for the purposes described.

No. 28,307. Clothes Peg. *(Epingle d'étendage.)*

Herman Buttermilch, Halle, Germany, 9th January, 1888; 5 years.

Claim.—A clothes peg consisting of a bifurcated stem *h*, having wing pieces *a*, *b* and jaws *c*, *d*, substantially as described.

No. 28,308. Surface Decoration.

(Ornementation de surface.)

William W. Scott, Montreal, Que., 9th January, 1888; 5 years.

Claim.—The process of moulding relief ornament from asbestos cloth or paper, by placing the cloth over a concave mould, laying over it a thickness of rubber, or equivalent substance, and confining the whole in a press, all as herein set forth.

No. 28,309. Lubricator. *(Graisseur.)*

Patrick Brownley, St. John, N.B., 9th January, 1888; 5 years.

Claim.—1st. In a lubricator, the combination, with a supply chamber or reservoir, of a feeding chamber, eduction and induction valves being arranged in connection with the feeding chamber, substantially as described 2nd. In a lubricator, the combination, with a supply reservoir or chamber, of a feeding chamber, an induction valve with a gravity eduction valve, and a vent tube, substantially as described. 3rd. In a lubricator, the combination, with a bottom casting having a central bore and a valve chamber, of a casing constituting a feeding chamber, valves arranged in connection with said chamber, a vent pipe leading to said chamber, a storage chamber within which the feeding chamber is arranged, a steam pipe arranged in the storage chamber, and a means for regulating the supply of steam passing through said pipe, substantially as described. 4th. The combination, with the oil reservoir, of the feeding chamber in the bottom thereof, a downward opening valve in the bottom of the feeding chamber, a separate and independent downward closing valve in the top of the chamber, to be raised by the upward movement of the valve below it, and a vent tube leading into the feeding chamber, substantially as set forth. 5th. In a lubricator, the combination, with a supply reservoir or chamber, of a feeding chamber, an induction valve, a spring arranged in connection with said valve, a gravity eduction valve, a vent tube, substantially as described.

No. 28,310. Envelope. *(Enveloppe.)*

Daniel B. Detweiler, Hamilton, and Jacob M. Staebler, Berlin, Ont., 9th January, 1888; 5 years.

Claim.—1st. The angle at end of envelope, as and for the purpose hereinbefore set forth. 2nd The perforation of holes or indentations thereon, as and for the purpose hereinbefore set forth.

No. 28,311. Metallic Hame Fastener.

(Coupletère métallique d'attelles.)

John H. D. Everett, St. Ignace, Mich., U. S., 9th January, 1888; 5 years.

Claim.—1st. The combination, in a metallic hame fastener, of a female strap provided with a hook at one end, a lever strap pivotally secured thereto at the other end, and a male strap adjustably connected to said lever strap and provided with a hook at one end, said male strap being adapted to fold within the lever strap, and both male and lever strap adapted to fold within the female strap, substantially as described. 2nd. The combination, with the male and female straps A, B, and the lever C pivotally secured to the strap A and engaging into the toothed slot *c*, of the gravity dog D and the lip *g* on the lever C, substantially as described. 3rd. In a hame fastening device, the combination of the female strap A provided with the hook *a*, the male strap B provided with the hook *b*, and the toothed slot *c*, the slotted lever C pivotally secured to the strap A, and provided with the pin *f* and the lip *g*, the gravity dog D and the locking pin *i*, all combined and operating substantially in the manner and for the purposes described.

No. 28,312 Apparatus for the Manufacture of Illuminating and Heating Gas. *(Appareil à gaz d'éclairage et de chauffage.)*

Reinhold Boeklen, Brooklyn, N. Y., and Thomas Wanless, Chicago, Ill., U.S., 9th January, 1888; 5 years.

Claim.—1st. The process of manufacturing gas, which consists in eliminating the light gases or vapors from crude petroleum by subjecting them to heat, fixing said gases by passing them through heated tiles in a fixing chamber, subjecting the residual petroleum to a body of incandescent fuel into which steam is delivered, said petroleum being delivered in proximity to said steam delivery pipes, and then conducting off and fixing the gases thus produced by passing them through said fixing chamber simultaneously with the other gases. 2nd. The combination, in one cupola, of the removable vertical steam heaters O, the vertical removable oil-decomposing retorts provided with a series of shelves and, at or near their tops, with an oil inlet pipe, and a fuel chamber connecting with the lower end of such oil retorts, as described. 3rd. The combination, in one cupola, of a fuel chamber, a fixing chamber, a removable steam superheater connecting with the lower portion of such fuel chamber, and a vertical removable oil-decomposing retort, provided with a series of shelves in said retort, opening at the bottom into the fuel chamber, for the purpose described. 4th In an apparatus, the combination, for generating gas from water and crude oil, a vertical movable oil retort, an oil supply pipe and a series of shelves in said retort, of which the base is perforated to admit undecomposed steam and also allow the residuum to pass in the fuel, its top discharging into a fixing chamber, provided with tortuous passages, all within a single surplus, substantially for the purpose herein set forth.

No. 28,313. Regulating Heat in the Process of Raising Poultry Artificially.

(Régulateur de chaleur dans les incubateurs.)

Edward Gerred, Toronto, Ont., 9th January, 1888, 5 years.

Claim.—1st. The combination of the valve A B and the regulating screw D C, substantially as and for the purpose hereinbefore set forth. 2nd. The combination, with the valve A B and the regulating screw D C, of the levers I, K, substantially as and for the purpose hereinbefore set forth.

No. 28,314. Grain Elevator. *(Elévateur à grain.)*

John A. McLennan, Chicago, Ill., U. S., 9th January, 1888; 15 years.

Claim.—1st A grain elevator building having the shipping and receiving elevators located alternately with the garners and scales and all in one line, whereby both sets of elevators may be operated from a single line of shafting. 2nd. In an elevator building, the elevating apparatus placed in pairs or sets of two lengthwise throughout the building, combined with the receiving elevators located immediately adjoining and co-operating with the shipping elevators, substantially as described. 3rd. In a grain elevator the combination with two garners J, J^1, placed side by side, and a pair of elevators F, F^1, placed together and contiguous to the garner J^1, of another pair of elevators F, F^1, placed together and contiguous to the garner J, the said elevators and garners being arranged all in the same line, substantially as shown and described. 4th. In a grain elevator, the combination, with two garners J, J^1, set side by side to two scales L, L^1, placed below the garners, of two elevators F, F^1, placed side by side, a pair of said elevators being arranged upon either side of the garners and scales, substantially as described. 5th. In a grain elevator, the two scales L, L^1, placed side by side, the elevators F, F^1 and F, F^1, arranged in pairs side by side and on either side of the scales, in combination with the stationary pipe *e* connected to the scales L^1, the pipe *f* connected to the scales L, and the separate pipes *d*, *h*, substantially as described. 6th. In a grain elevator, the combination, with the two elevators F, F^1, placed side by side and operated by the same line of shafting, of the receiving boot a^3 and the shipping boot a^4, both placed in, and surrounded by a single hopper or tank G, the boot a^4 being below the level of the boot a^3, substantially as and for the purposes set forth.

No. 28,315. Handle. *(Manche.)*

John E. Gaitley, Troy, N.Y., U.S., 10th January, 1888; 5 years.

Claim.—1st. As an improved article of manufacture, a handle consisting of a bifurcated casting, and a detachable coiled wire spring supported by the arms of the casting in a position such that its longitudinal axial line is right angular to the axial line of the handle shank, substantially as described and for the purposes set forth. 2nd. In a handle, the combination, with a detachable spring coil, of a bifurcated coil-supporting shank provided on the inner faces of its arms with coil end seats, and with an attaching stem, substantially as described and for the purposes set forth.

No. 28,316. Steam Boiler. (*Chaudière à vapeur.*)

Andrew Gray, Victoria, B.C., 10th January, 1888, 5 years.

Claim.—The *continuation of the shell of boiler* E on *top side*, past the tube sheet B, with crown sheet C and semicircular head D forming an overhanging portion, substantially as and for the purpose hereinbefore set forth.

No. 28,317. Railway Frog. (*Rail de croisement.*)

Henry Chance, Fostoria, Ohio, U.S., 10th January, 1888; 5 years.

Claim.—1st. A railway-frog provided with downward and inward tapering flange-ways a^1, a^2, separated by a raised tapering tongue *c*, and converging into a similar shaped single flange-way *a*, said flange-ways and tongue formed by a single integral piece of metal, said piece constructed to form a foot-guard, substantially as described. 2nd. The intermediate metallic bed A, constituting the principal part of a railway frog constructed to fit into the sides of adjacent supporting rails, said bed provided with downward and inward tapering flange-ways a^1, a^2, separated by a raised tapering tongue, and converging into a similar shaped single flange-way *a*, substantially as described. 3rd. A railway frog provided with downward and inward tapering flange-ways a^1, a^2, separated by a raised tapering tongue C, and converging into a similar shaped single flange-way *a*, said flange-ways formed by a single integral bed-piece A and tongue-piece C, said tongue-piece with or without an integral engagement with the bed-piece, said frog constructed to form a foot-guard, substantially as described. 4th. In combination with supporting rails, a bed-piece A fitted into the sides of said rails and constituting the principal part of a railway frog, said bed-piece provided with flange-ways a^1, a^2, separated by a tongue C and converging with a single groove *a*, substantially as and for the purposes described. 5th. A railway-frog having downward and inward tapering flange-ways a^1, a^2, converging into a single groove or flange-way *a*, and separated by a tongue or point C, said frog provided with supporting sides, and constructed to close up all openings in which a foot may become fastened and form an effectual foot-guard, substantially as described. 6th. In combination with supporting rails B, B1, of a bed-piece A fitted into the sides of said rails, and constituting the principal part of a railway frog, said bed-piece provided with flange-ways a^1, a^2, separated by a tongue C and converging into a single flange-way *a*, said rails made reversible and said frog constructed to form a foot-guard, substantially as described.

No. 28,318. Ferrule, etc. (*Frette, etc.*)

Charles P. Hawley, New York, U.S., 10th January, 1888, 5 years

Claim.—1st. A ferrule or like article, constructed with parallel internal notches *a*, the said notches being formed to produce the inclined faces *b*, and parallel resistance shoulders *c* at right angles to the axis of the ferrule, substantially as and for the purpose specified. 2nd. As a new article of manufacture, a ferrule or like band or eye having parallel serrations in its inner surface, substantially as and for the purpose specified. 3rd. A ferrule or like article, constructed substantially as herein shown and described.

No. 28,319. Combined Whip and Cane.

(*Canne-fouet.*)

Owen Godward, New Albany, Ohio, U. S., 10th January, 1888, 5 years.

Claim.—1st. In a combined whip and cane, the combination, with the inner tapering whip section D, of a ferrule E on the thicker end of the same, a block F of rubber, leather, or the like, outside the ferrule, and a screw G passed through the block F and ferrule E, into the whip section D, substantially as shown and described. 2nd. In a combined whip and cane, the combination of a tubular handle enclosing a telescopic whip section, a plug closing one end of the tubular handle and having a socket, and a removable plug or ferrule having a neck adapted to the socket and to the other end of the tubular handle, substantially as described.

No. 28,320. Combined Chair, Desk and Table. (*Siège-pupitre table.*)

Henry G. Powell, London, Eng., 10th January, 1888; 5 years.

Claim.—1st In a combined chair, desk and table, the combination, with the back flap *a* and the hinge *b*, of the rack *c*, constructed substantially in the manner and for the purposes set forth. 2nd. In a combined chair, desk and table, the combination, with the back flap *a* and the hinge *b*, and the rack *c*, of the supplemental desk *s* and the double jointed hinge *j*, constructed substantially in the manner and for the purposes set forth. 3rd In a combined chair, desk and table, the combination, with the back flap *a*, of the hinge *bd* and the receptacle *e*, arranged substantially in the manner and for the purposes set forth. 4th. In a combined chair, desk and table, the combination, with the back flap *a*, of the supplementary desk *k*, constructed substantially in the manner and for the purposes set forth.

No. 28,321. Device for Sorting Horse Shoe Nails. (*Appareil pour trier le clou à cheval.*)

William M. Stone and Henry Dundas, Keeseville, N. Y., U. S., 10th January, 1888, 5 years.

Claim.—1st. The combination of a revolving ring having recesses for carrying nails, a block for supporting said ring and having a recess or pocket for the discharge of short nails, a cam for throwing the shanks of the long ones out of a perpendicular or vertical position, an arm acting as a cam to force the short ones out of the recesses in the ring, and a spring to retain the heads or necks of the long ones in position while passing the pocket provided for the discharge of the short ones, substantially as described. 2nd. The combination, with a revolving ring having recesses, of a block supporting the said ring and having a recess forming a pocket, an adjustable cam having a rabbet and held on the said block, a bent arm extending downwardly and a spring to hold the short nail in place until it reaches the said pocket, substantially as described. 3rd. The combination, with a revolving ring having recesses, of a block supporting the said ring, a cam, a bent arm extending downwardly, and a spring extending to the said arm to hold the nails in place, substantially as described. 4th. The block A provided with the recess B, and the recess E forming the pocket E1, the vertically adjustable cam F having the rabbet F1, the outwardly bent arm H secured to the rim of the block, and the spring J fastened to the block and extending along the upper end of the rim of the block, in combination with the ring C having the recesses D, substantially as described.

No. 28,322. Machine for Setting Saws. (*Machine à donner la voie aux scies.*)

John C. Ballew, Evansville, Ind., U.S., 10th January, 1888; 5 years.

Claim.—1st. In a machine for setting the teeth of saws, the combination of a roller having means for revolving it, and formed at one end with cogs projecting beyond the surface, and having bevelled sides facing inwards, a similar roller having its cogs meshing with the other roller, and having means for adjusting it towards and from the other roller, horizontally adjustable slotted guides for the saw, registering with the space between the rollers, and a feed-wheel at one side of the rollers having ratchet-shaped teeth meshing with the teeth of the saw, as and for the purpose shown and set forth. 2nd. In a machine for setting the teeth of saws, the combination of a roller having means for revolving it, and formed at one end with cogs projecting beyond the surface, and having bevelled sides facing inward and provided at the other end with a cogged rim, a block sliding in ways and having means for adjusting it towards or from the roller, and provided with a shaft projecting parallel to the shaft of the roller, a roller similar in shape to the other roller, having its bevelled cogs meshing with the bevelled cogs of the other roller, and having a cogged rim meshing with the other rim, and horizontal guides registering with the part of the rigid roller, nearest to the movable roller, as and for the purpose shown and set forth. 3rd. In a machine for setting the teeth of saws, the combination, with a pair of rollers having bevelled cogs at one end meshing with each other, and having the bevelled sides facing inward, of rods sliding in horizontal bearings at both sides of the rollers, and having horizontal slots in their ends open at the ends, and registering with the space between the rollers, and having their rear ends connected by a yoke, and a screw journalled at one end and having its threaded portion passing through a threaded perforation in the middle of the yoke, as and for the purpose shown and set forth. 4th. In a machine for setting the teeth of saws, the combination, with a pair of rollers having cogs at one end meshing with each other, and having bevelled sides facing inward and projecting beyond the surfaces of the rollers, and provided with means for revolving them, of a feed wheel at one side of the rollers having means for revolving it with the rollers, and having ratchet-shaped teeth for engaging the teeth of the saw, as and for the purpose shown and set forth. 5th In a machine for setting the teeth of saws, the combination of a frame composed of an upright back piece, and a forwardly bent top piece, and a downwardly bent front piece, a roller journalled upon a shaft secured to the front and back piece, and having a cogged rim at its inner end, and means for revolving it, and having cogs at the outer end projecting beyond the surface and having bevelled sides and facing inward, a similar roller having its cogged rim and its bevelled cogs meshing, and having means for adjusting it towards or from the other roller, and journalled upon a shaft having a notch or recess in the underside of its outer end, and a stirrup hinged with its ends to the lower end of the front piece above the lower roller, and having a set-screw in its double end bearing with its end in the recess or notch of the adjustable shaft, as and for the purpose shown and set forth. 6th. In a machine for setting the teeth of saws, the combination of a frame consisting of an upright back piece, and a forwardly top piece, and a downwardly bent front piece, a roller journalled upon a shaft extending through the front and back piece and having means for revolving it, and provided with a cogged rim at its inner end, and with cogs at the outer end projecting beyond the surface of the roller, and having the inner sides bevelled, a block sliding in vertical ways upon the lower portion of the back plate and having a lip projecting from its lower end, and a shaft projecting from the upper end formed with a recess or notch in the upper side of the outer end, a screw provided with a hand wheel at its lower end and turning in a perforated lip upon the back piece, and having its upper end journalled in the lip of the sliding block, a roller similar to the upper roller journalled upon the shaft of the sliding block, having its cogged rim and bevelled cogs meshing, and a stirrup hinged with its ends to the lower end of the front piece, and provided with a set-screw having its upper end engaging the recess or notch in the shaft of the sliding block, and working in the doubled end of the stirrups, as and for the purpose shown and set forth. 7th. In a machine for setting the teeth of saws, the combination of two rollers having cogged rims at the inner ends, and cogs at the outer ends, projecting beyond the surfaces and having bevelled sides facing inward, a vertically journalled drive-shaft, having a pinion engaging a bevelled cog wheel upon the upper roller, and having a small pinion below its fly-wheel, a bracket having a horizontally slotted arm sliding adjustably upon the front of the frame for the rollers above the upper roller, and having an outwardly projecting arm, a frame sliding with a horizontally recessed and slotted central portion upon the outer arm of the bracket, and having vertical bearings at its ends, and a shaft in the bearings provided at the upper end with a cog-wheel meshing with the pinion upon the drive-shaft, and at its lower end, a wheel formed with ratchet-shaped teeth engaging the teeth of the saw, the said wheel registering with the space between the two rollers, as and for the purpose shown and set forth. 8th. In a machine for setting the teeth of saws, the combination of a frame having an upright back piece secured in the bench or other object, and having a forwardly bent top piece and a downwardly bent front piece, and provided with vertical ways upon the lower portion of the back piece, and with a lip at the lower end of the ways formed with a screw-threaded perforation, a roller hav-

ing a bevelled cogged rim at its free *end*, and having a cogged rim next to the bevelled rim and provided with cogs at the outer end, having bevelled sides facing *inward* and projecting beyond the surface of the roller, a vertical shaft journalled in the top piece and having a fly-wheel at the upper end provided with suitable means for revolving it, and having a pinion under the fly-wheel, and a bevelled pinion upon the lower end meshing with the bevelled rim of the roller, a block sliding in the ways of the back piece and having an upwardly *projecting shaft* at the upper end, and a lip e the lower end, having a screw journalled in it turning in the threaded perforation of the lip of the back piece, a roller similar to the upper roller journalled upon the shaft, and meshing with the cogged rim and the bevelled cogs of the upper rollers, a stirrup hinged with its ends to the lower end of the front piece, and having a set screw in its doubled lower end engaging the notch or recess in the outer end of the shaft of the sliding block, rods having *horizontal* slots in their forward ends registering with the space between the rollers and sliding in horizontal bearings in the back piece, and provided with a uniting yoke at the rear ends, a screw journalled with its free end in the back piece and fitting in a screw-threaded perforation of the yoke, a *horizontally* adjustable bracket upon the front piece of the frame, a frame sliding outwardly, adjustable upon the bracket and having vertical bearings in its ends, and a shaft journalled in the bearings and having a cog-wheel upon the upper end engaging the pinion of the drive-shaft, and a feed-wheel at the lower end, registering with the space between the rollers and provided with rat-*chet-shaped* teeth engaging the teeth of the saw, as and for the purpose shown and set forth.

No. 28,323. Annunciator and Alarm Signal.

(Avertisseur et signal-tocsin.)

Joseph W. Frost, New York, N. Y., U. S., 10th January 1888; 5 years.

Claim.—1st In an *electric* alarm system, the combination, with circuit-controlling mechanism in circuit with receiving apparatus at a distant or central station, of releasing devices for the said circuit-controlling mechanism and electro magnetic detent devices therefor, and *circuit-controllers* located in different sections of a hotel or other structure to be protected, the said *circuit-controllers being* in circuit with the said electro-magnetic detent devices, substantially as and for the purpose set forth. 2nd In an *electric* alarm system, the combination of an electric circuit, including, first, a normally open electric thermostat in the section of a building, secondly, an electric *generator*, thirdly, a clock-work electro-magnetic releasing device, and, fourthly, an electro-*magnetic stopping* device and a circuit-breaking wheel in said building, and in an independent signal-circuit normally closed, the said wheel being geared to said clock-work, and the said stopping device being provided for said wheel, substantially as and for the purpose set forth. 3rd. In an electric alarm *system*, the combination of electric thermostats or similar circuit-closers located at different sections of a structure, such, for instance, as a house or hotel, a circuit-breaking wheel, and electro-magnets in circuit *respectively* with said *circuit*-closers, and provided with armatures adjacent to said wheel, which has a projection of such length as normally to pass said armatures without touching them, all located in a noticeable position in said building, such, for instance, in the office of a hotel or upon the outside of the building, and an electric bell or similar signal located at a distant station, such as an engine house or fire tower, and in circuit with said circuit-breaking wheel, the said *magnets* and said *signal being* in *independent* circuits, substantially as and for the purpose set forth. 4th. In an electric alarm system, the combination, with a moving circuit controlling mechanism, provided with a stop or projection, and in circuit with receiving apparatus at a distant or central station, of an electro-magnet in a distinct circuit, the armature of said magnet being normally held *out* of the path of the said stop or projection, but being adapted to be drawn into the path of the said stop or projection, when the condition of the magnet circuit is changed, and the said electro-magnet having in its circuit a circuit-controller, substantially as and for the purpose set forth. 5th. In an electric alarm system, the combination of a series of electro-magnets connected respectively by electric conductors with independent systems of alarm devices, a rotating break-wheel formed with notches to correspond in number to the number of said systems, a contact point for said wheel, a projection of said wheel to encounter the armatures of said magnets, and a current generating battery, the said alarm devices being located in sections of a building, such as a hotel, and the brake-wheel and the other named elements at any convenient position in or near said building, substantially as and for t[he] purpose set forth. 6th In an electric alarm system, the combination of a normally closed electric circuit, including a *continuous current* generator, a circuit-breaking wheel provided with notches upon its periphery, a contact point which presses upon said wheel, and an electric signal, the said notches being of two kinds, the one for giving an attention or warning signal, and the other for giving the alarm proper, and a second circuit normally open and including an electric generator, an automatic circuit-closer, an automatic electro-magnetic stop for said wheel, and automatic electro-magnetic clock releasing device for said wheel, substantially as and for the purpose set forth. 7th. In an electric alarm system, the combination of a normally-closed electric circuit, including a continuous current generator and electric signal located at one station, a circuit-breaker located at a second station, a *second* circuit normally open and containing a second generator, an electro-magnetic releasing device for said circuit-breaker, which is geared to clock-work normally tending to propel said circuit-breaking wheel, an electro-magnetic stopping device for said circuit-breaker, and an automatic circuit-closer located at a third station, and a third circuit located at the said second station, and including a second electric signal, such as a bell, and normally open through the said circuit-breaker, and including also the said second generator, substantially as and for the purpose set forth. 8th. In an electric alarm system, the combination of a circuit-breaking wheel provided in the order named with notches for giving an attention signal, with other notches for giving an alarm, indicating a number, such as that of a building, and with still other notches for giving another number, as of a section of said building, an automatic electro-magnetic releasing device for said break-wheel, which is geared to clock work normally tending to propel said wheel, and an independent electric stopping device for said wheel, both the releasing and stopping devices being located in the same circuit normally open, and the said wheel being in a separate circuit normally closed, substantially as and for the purpose set forth. 9th. In an electric alarm system, a moving circuit-breaking wheel, provided with notches for giving a precautionary alarm, with other notches for giving an alarm indicating a number, and still other notches to indicate a second number, and with a projecting contact-point or electrode for short circuiting an electro-magnetic device, which has an operating connection with a stop for checking the motion of said wheel, the said electrode being in circuit with a movable electrode, which has an electro-magnetic operating connection with an electric thermostat, substantially as described. 10th. In an electric alarm system, the combination of a moving circuit-breaking wheel, provided with three sets of notches for giving three corresponding and distinct alarms, and with a projection in a normally open circuit, including a circuit closer, said wheel, and an electro-magnetic stop for said wheel, independent of said projection, the said electro-magnetic stop being in a short circuit to said projection, and an electric bell or similar signal located in a circuit normally open through said projection, substantially as and for the purpose set forth. 11th. In an electric alarm system, the combination of an electric generator, an automatic rotating or moving circuit-breaker, and a stop for said circuit-breaker held to be encountered by a projection thereof, said circuit-breaker and said stop being oppositely electrified by said generator, on account of which, when said projection of the circuit-breaker and interrupter meet, a new circuit for the current is formed, substantially as and for the purpose set forth. 12th. In an electric alarm system, the combination of an electrified rotating break-wheel formed with notches, and a pin or projection, an oppositely electrified contact point or arm for said break-wheel, by means of which, when said notches pass said point, alarms are given, in combination with a series of stops, magnetically operated by separate circuits, and provided for said break-wheel, which is held to be encountered by said projection, by means of which said wheel may be interrupted at different stages of its revolution to transmit different signals dependent upon the point at which it is so interrupted, substantially as described. 13th. In an electric alarm system, the combination, with a circuit breaking wheel and an electro-magnetic releasing device therefor, of a series of electro-magnetic detents for the said wheel, located in independent shunt circuits, and a series of open circuit push buttons H, one in each of the shunt circuits, including the electro-magnetic detents, an *open-circuit push-button* G in a shunt around the circuit breaking wheel, and an open circuit push-button G in a shunt around the electro-magnetic releasing device, whereby the system of circuits can be tested without releasing the circuit-breaking wheel, substantially as described. 14th. In combination with the shaft *k* of the electric circuit-breaking wheel C, an arm or projection r extending therefrom, and a covering *u*, over an opening *v* supported in slides and normally resting upon said arm, suitable characters or words being located said opening, substantially as and for the purpose set forth. 15th. The combination, with a circuit-breaking wheel, provided with notches to represent a definite signal, and a spring normally in contact with the said wheel, and an unbroken space between the point of contact and the first notch, of an electro-magnetic releasing device for said wheel, the magnet of the said releasing device being operatively connected with the escapement, which controls the movements of the wheel, and being also in circuit with one or more circuit-controllers, such as thermostats, whereby the spring will remain in contact with the wheel for a considerable period, and whereby the signalling mechanism will be operated only by an extended or a permanent change in the condition of the circuit, substantially as set forth. 16th. The combination, with a circuit-controlling wheel, provided with suitable releasing mechanism and with a series of detents capable of stopping the said wheel at different stages of its progress, of an opening in the casing in front of the said wheel, and an annunciating disk operated by the movement of the wheel, so as to bring different signs or numbers in line with the said opening, whereby the reading at the said opening will always indicate at what point the progress of the disk has been interrupted, substantially as and for the purpose set forth. 17th. In an electric alarm system, the combination of a moving circuit breaking wheel, provided with two sets of notches for giving two corresponding and distinct signals, and with a projection in a normally open circuit, including a circuit-closer, said wheel and an electro-magnet stop for said wheel, independent of said projection, the said electro-magnet stop being in a short circuit to said projection, and an electric bell or similar signal located in a circuit normally open through said projection, substantially as and for the purpose set forth. 18th. In an electric alarm system, a moving circuit controlling mechanism and electro-magnetic detents located in independent circuits and arranged at different points along the path of the same said detents being in circuit with a series of circuit-controllers, substantially as and for the purpose set forth. 19th. In an electric alarm system, the combination of a circuit-controlling mechanism, an electro-magnetic stop therefor, sections of a building, such as the floors of a house, and circuit-closers, such as electric thermostats in said sections, and having electrical connections with said stopping devices, said mechanism being in circuit with an electric signal at a distant station, such as at a fire-engine house, substantially as and for the purpose set forth 20th. In an electric alarm system, the combination with a circuit-breaking wheel and an electro-magnetic releasing device therefor, of a series of electro-magnetic detents for the said wheel located in independent shunt circuits, a series of open-circuit push-buttons H, one in each of the circuits, including the electro-magnetic detents, and an open circuit push button G in a shunt around the circuit-breaking wheel, whereby the system of circuits can be tested without sending in an alarm, substantially as described. 21st. In an electric alarm system, a moving circuit controlling mechanism, a releasing device therefor, and a series of detents for the same, by means of which said mechanism can be held or checked at different stages of its progress after release, whereby the same circuit controller may be made to indicate different signals dependent upon the point where its progress is interrupted, substantially as set forth.

No. 28,324. Machine for Turning Irregular Forms. (*Machine à tourner les formes irrégulières.*)

William Hoopes, West Chester, Penn., U. S., 10th January, 1888; 5 years.

Claim.—1st. In a machine for turning irregular forms, substantially as specified, the combination, with the movable spindle or centre E^1, of the double eccentric E^2, having links e^1, e^1 secured to both sides of said spindle, and the actuating-lever e^2, all substantially as and for the purpose specified 2nd. In a machine for turning irregular forms, substantially as specified, guides or tracers consisting of wearing-shoes having their surfaces prolonged, and provided with tenons conforming in line with their wearing faces, and clamping arms or holders provided with slots curved or straight, to conform to the tenons of the shoes, and provided with adjustable clamps, whereby the shoes can be moved and secured at will in the clamping-arms, all substantially as specified, so that the contact-surfaces of said guides or tracers can be adjusted to present different wearing-surfaces to the model and blank 3rd. In a machine for turning irregular forms, substantially as specified, the combination, with the driving-pulleys G^1, G^2 and the belts g, g^1, of the pressure-pulleys G^5, G^6, secured in a centrally-pivoted frame G^7, and placed as shown and described, so as to act on the slack sides of belts g, g^1, and mechanism for actuating said frame to bring the pressure pulleys into operation, as desired. 4th. In a machine for turning irregular forms, substantially as specified, the combination, with the driving-pulleys G^1, G^2 and the belts g, g^1, of the pressure-pulleys G^5, G^6, secured in a centrally pivoted frame G^7, and placed as shown and described, so as to act on the slack sides of belts g, g^1, the pivoted lever g^3, connecting rod g^2 and mechanism for actuating the lever to bring the pressure-pulleys into operation, as desired. 5th. In a machine for turning forms, substantially as specified, the combination of the rod I pivoted on the free end of the lever G^8, which controls the adjustment of the pressure pulleys G^5 and G^6, substantially as specified, the guide slot I^2 secured on the frame of the machine, a stop or shoulder upon which the rod is sustained in its highest position, the bell-crank lever M^6 and the sliding bar M, whereby the motion of the carriage is made to effect an immediate change in the speed of the machine at the desired point. 6th. In a machine for turning irregular forms, substantially as specified, the combination of the rod I having shoulder i^1, and pivoted on the free end of a lever G^8, which controls the adjustment of the pressure-pulleys G^5 and G^6, substantially as specified, the guide-slot I^2, which limits the arc through which the rod I can turn on its pivot, and the crank-arm L^4 secured on the shaft L, and arranged to engage the shoulder i^1 of the rod I, and elevate the rod and its attached lever G^8 when the shaft L is rotated, to throw the frame into operative position with the cutters. 7th. In a machine for turning irregular forms, substantially as specified, the combination of the rod I having shoulder i^1, and pivoted on the free end of a lever G^8, which controls the adjustment of the pressure-pulleys G^5 and G^6, substantially as specified, the guide-slot I^2 which limits the arc through which the rod I can turn on its pivot, the crank-arm L^4 secured on the shaft L, and arranged to engage the shoulder i^1 of rod I and elevate the rod and its attached lever G^8, when the shaft L is rotated, to throw the frame into operative position with the cutters, the sliding bar M actuated by the carriage and the bell-crank lever M^6 which, when pressed by the end of bar M, throws the rod I away from the crank L^4 freeing the shoulder i^1, and allowing the rod and lever G^8 to fall and change the speed of the gearing in the frame 8th. In a machine for turning irregular forms, substantially as specified, in combination, with the rod I pivoted on the free end of lever G^8, which actuates and controls the adjustment of the pressure-pulleys G^5, G^6, the lever G^8 having a hook R^7 secured at one end in such manner as to engage a pin i on rod I, when said rod is at its lowest position and the end of lever R^6 is depressed, said lever having a weight R^8 secured at its other end in such manner as to counterbalance the weight of rod I and its attachments, a cord or chain R_3, by which the weighted end of lever R^6 is elevated and the hook R_7 engaged with pin i, and mechanism for actuating said cord or chain. 9th In a machine for turning irregular forms, substantially as specified, the combination of the pressure-pulleys G_5, G_6, arranged to act upon the driving belts g, g^1, as specified, and actuated through a pivoted lever G^8 the rod I pivoted on the end of lever G^8, and having a spring I^1 secured to it, the clutch-lever K^2 actuating the clutch k, whereby the screw-shaft K^1 is engaged or disengaged and the detent k^1 secured upon the frame A, so as to engage and retain the lever K^2 when forced over by spring I^1, all substantially as shown and described, so that the elevation of the rod I at the same time causes the engagement of a pressure-pulley with a driving-belt connected with, and driving the gearing of the work-holding or movable frame, and also by means of its spring I^1 forces the clutch-lever K^2 over to engage the screw-shaft K^1. 10th. In a machine for turning irregular forms, substantially as specified, the combination of the rod I, pivoted on the free end of lever G^8, which actuates the pressure-pulleys G^5, G^6, substantially as specified, said rod having shoulder i^1, pin i and spring I^1, the weighted lever R^6 having hook R^7 and cord or chain R^3 for actuating it, the shaft L having crank arm L^4, the bell-crank lever M^6, the sliding bar M, the frame A having guide-slot I^2, and detent k^1, and the clutch lever K^2, all substantially as and for the purpose specified, so that, at the proper point in the travel of the carriage, the bar M acting through lever M^6 will throw the rod I off the arm L^4, allowing it to fall and change the speed of the gearing in the work-holding frame, then by means of hook R^7, elevating rod I to a point where both pressure-pulleys will be disengaged and sustaining it there until the revolution of shaft L raises it again to its first position by means of crank L^4, said elevation bringing the force of spring I^1 to bear on lever K^2, to engage its clutch and force it into detent k^1. 11th. In a machine for turning irregular forms, substantially as specified, the combination of the rod I pivoted on the free end of lever G^8, which controls the adjustment of the pressure-pulleys G^5, G^6, the weighted lever R^6 having hook R^7 adapted to engage with a pin on rod I, as specified, and a chain or cord R_3 to elevate it, a drum R^2 running loosely on shaft D, and attached to chain R_3, a gear wheel R^1 also loosely journalled on shaft D, and geared with a pinion on a spindle E, forming part of the mechanism which rotates the blank, a clutch V, whereby the drum R^2 and gear-wheel R^1 are engaged, pivoted lever V^1 for engaging and disengaging the clutch V, bent rod V^2 having a projection u adapted to engage with a lug u^1 on clutch-lever K^2, clutch-lever K^2 having lug u^1 arranged to engage projection u of rod V^2, and through it engage the clutch V when lever K^2 is thrown to disengage the clutch directly controlled by it, and mechanism, substantially as described, for disengaging clutch V and allowing the weighted lever R^6 to fall and elevate rod I, when the frame is thrown away from the cutter, all substantially as and for the purpose specified. 12th. In a machines for turning irregular forms, substantially as specified, the combination of the rod I pivoted on the free end of lever G^8, which controls the adjustment of the pressure-pulleys G^5, G^6, the weighted lever R^6 having the hook R^7 adapted to engage with a pin on rod I, as specified, and a chain or cord R^3 to elevate it, a drum R^2 running loosely on shaft D and attached to chain R^3, a gear wheel R^1 also loosely journalled on shaft D and geared with a pinion on a spindle E forming part of the mechanism which rotates the blank, a clutch V, whereby the drum R^2 and gear-wheel R^1 are engaged, pivoted lever V^1 for engaging and disengaging the clutch V, bent rod V^2 having a projection u adapted to engage with a lug u^1 on clutch-lever K^2, clutch-lever K^2 having lug u^1 arranged to engage projection u of rod V^2, and through it engage the clutch V when lever K^2 is thrown to disengage the clutch directly controlled by it, and mechanism, substantially as described, for disengaging clutch V and allowing the weighted lever R^6 to fall and elevate rod I, when the frame is thrown away from the cutter, all substantially as and for the purpose specified. 13th. In a machine for turning irregular forms, substantially as specified, the combination of drum R^2 and clutch mechanism for throwing it in gear by the disengagement of the lever K^2, which controls the clutch by which connection is made between screw-driving shaft K^1 and the pulleys K, arranged substantially as shown and described, the chain or cord R^3 actuating the lever R^6, as described, and the sprocket-wheel R^4 having a cam its adapted to engage with the frame holding the model, &c., and thrust said frame away from the cutters when the clutch V is engaged, substantially as shown and described. 14th. In a machine for turning irregular forms, substantially as specified, the combination of the clutch-lever K^2 adapted to engage in a detent k^1 in the frame of the machine, and the sliding bar M having spring bolt M^1 and wedge M^2, whereby the bolt M^1 is pressed against the lever K^2, compressing the spring m^1 as the carriage advances, until the wedge M^2 releases the lever from detent k^1, when the spring forces the lever over quickly releasing the clutch k. 15th. In a machine for turning irregular forms, substantially as specified, the combination of clutch-lever K^2 having spring k^2 tending to hold the lever in position to keep the clutch K uncoupled, and the rod I having spring I^1, which, when said rod is elevated, presses against lever K^2, overcoming spring k^2 and forcing the clutch k to engage. 16th. In a machine for turning irregular forms, substantially as specified, the combination of the clutch-actuating lever K^2 having spring k^2 arranged to keep the clutch disengaged when the lever is free from its detent k^1, the sliding bar M having spring-bolt M^1 and wedge M^2 for releasing the lever from its detent, and throwing it rapidly to disengage the clutch, and the rod I arranged in connection with the mechanism controlling the pressure pulleys, substantially as specified, and having a spring I^1 which engages the lever K^2 when rod I is elevated and forces it into the detent k^1, all substantially as and for the purpose specified. 17th. In a machine for turning irregular forms, substantially as specified, the spring-clutch F^4 having a hooked arm F^5, F^6, and the driving-pulley F^3 having a detent lug f^1 secured near its periphery, in combination with a shaft N journalled in a frame N^1 so as to have a turning motion therein, and having a crank-arm and stop N^2 at its upper end, and a lever N^3 at its lower end, and a cam f secured on one of the gear-wheels of the work-holding frame, all substantially as shown and described, so that, when the frame is moved away from the cutters, the said cam will come in contact with the stop on crank-arm N^2, causing the shaft N to turn and, drawing the clutch F^4 into position, to engage the detent f^1 by means of the lever N^3, and the hooked bar F^5, F^6 18th. In a machine for turning irregular forms, substantially as specified, the spring-clutch F^4 and having a hooked arm F^5 F^6, and the driving-pulley F^3 having a detent-lug f^1 secured near its periphery, in combination with a shaft N journalled in a frame N^1, so as to have both a turning and sliding motion therein, and having a crank-arm and stop N^2 at its upper end, and a cross-bar or lever N^3 at its lower end, a cam f secured on one of the gear-wheels of the work holding frame and so placed as to come in contact with, and actuate the stop on crank N^2, when the frame is thrown away from the cutters, and a wedge secured on the sliding bar M, as specified, so as to elevate the bar lever N^3 above the hook F^6 before the cam f engages with the stop N^2, and to drop the said bar-lever permitting it to engage the hook F^6, and apply clutch F^4 at a determined point in the backward movement of bar M, all substantially as shown and described, so that the motion of the gearing in the frame may be arrested in a fixed and determined position immediately after the driving-belts which actuate it are released 19th. In a machine for turning irregular forms, substantially as specified, the combination with the frame B B D D C, which holds the model and work, and the mechanism for actuating them, and the shaft L having handle-lever L^1 and lever L^2, of the link or connecting-rod L^3 having one end curved and attached to lever L^2, so as to permit said lever to turn with shaft L to a line parallel to, or below the line of the points of attachments of the link L^3, and its other end provided with a slot l adapted to engage with a pin l^1 on the frame, all substantially as shown and described, and so that the frame can be thrown towards the cutters by means of the rotation of shaft L, while at the same time the oscillations of the frame in following the model take place independently of, and without moving the connecting-link L^3. 20th. In a machine for turning irregular forms, substantially as specified, the shaft L having handle-lever L^1 and levers L^2 and L^4, the frame B B D D C, and the lever G^8 actuating and controlling the pressure-pulley G^5, G^6, substantially as specified, in combination with the bent and slotted link L^3, and the rod I pivoted on the end of lever G^8 and provided with a stop i^1 and guide-slot in the frame of the machine, all substantially as shown and described, so that the turning of shaft L, by means of lever L^1, will simultaneously throw the frame toward the cutters and apply the pressure to the driving-

belt which actuates the gearing in said frame. 21st. In a machine for turning irregular forms, substantially as specified, the shaft L having handle-lever L_1 and levers L_2 and L_4, the frame B B D D C, the lever G_8 actuating and controlling the pressure-pulley G_5, G_6, substantially as specified, and the lever K_2 controlling the clutch which connects the carriage-driving shaft K_1, and the pulleys which drive it forward, in combination with the bent and slotted link L_5, and the rod I pivoted on the end of lever G_8 and provided with a stop i_1, spring I_2 and guide-slot in the frame of the machine, all substantially as shown and described, so that the turning of shaft L, by means of lever L_1, will simultaneously throw the frame toward the cutters, apply the pressure-pulley to the driving-belt which actuates the gearing in said frame, and throw lever K_2 into position to engage clutch k and start the carriage on its forward travel. 22nd. In a machine for turning irregular forms, substantially as specified, the screw-shaft K_1 having pulley K_3 geared with the driving shaft G, so as to be turned by said shaft in the direction to reverse the motion of carriage O, the suspended pressure-pulley K_5 controlled by bar C_3 having detent c_2 adapted to engage with lever C_1 attached to shaft C of the frame, and the wedge M_5 on sliding bar M, all arranged substantially as shown and described, in combination with shaft C_6 having crank-arms, as specified, rod C_4 attached to one of said crank-arms and having detent c_5, whereby it is engaged and drawn back by lever C_1 when the frame is thrown away from the cutters, rod C_6 attached to the other crank arm of shaft C_5 at one end, and resting on bar C_3 at the other, said rod carrying a brake-shoe C_7, and a wedge M_6 on bar M, situated behind and above wedge M_5, all substantially as and for the purpose specified, so that the throwing of the frame away from the cutters will, through lever C_1, at the same time apply the pressure-pulley K_5 to belt k_4, causing the carriage to return and by drawing the bar C_4 forward, cause the shaft C_5 to rotate, bringing the brake shoe C_7 close to the pulley K_3, the releasing of detent c_2, of bar C_3, by the action of wedge M_5, will, at the same time that it releases pressure-pulley K_5, bring the shoe closer to the pulley by elevating the end of the rod C, resting on the rod C_3, the further elevation of the rod C_3 by means of wedge M_6, will cause the application of the brake to pulley K_3, and the throwing back of the frame and lever C_1 toward the cutters will release the brake, by allowing bar C_4 to move forward the shaft C_5 to turn, and the shoe-carrying bar C_6 to fall. 23rd. In a machine for turning irregular forms, substantially as specified, the combination of the work-carrying frame supported and pivoted upon shaft C, having an arm t, and the drum R_2 secured upon it and adapted to engage with the gearing of said frame by means of a clutch V, and having also a lever C_1 engaged with a pressure-pulley adapted to engage the carriage-driving shaft with a belt geared to drive it in the reverse direction, the belt gearing connecting the gearing of the frame with the driving-shaft, said gearing being controlled by the pressure-pulleys G_5, G_6, actuated by lever G_8 and rod I, as specified, the cutter-carriage O, actuated by screw-shaft K_1, the clutch-lever K_2, controlling the clutch k, which connects the shaft K_1 with the forward driving-pulleys, the sliding bar M having appliances, as specified, which operate successively to change the speed of the gearing in the frame to throw off the clutch k, and, in its return motion, to throw off the pressure pulley acting to return the carriage to the starting point, the chain R_3 attached to drum R_2 and lever R_6, and passing over a cam sprocket-wheel R_4, R_5, secured to the frame of the machine, the weighted lever R_6 having hook R_7, and the shaft L having handle L_1, lever-arms L_2 and L_4, said shaft being connected with the movable frame by a link L_3, all substantially as and for the purpose specified, so that the throwing of the movable frame toward the cutters by the rotation of shaft L causes the pressure pulleys to engage the gearing of the said frame with the driving shaft, and the driving-shaft K_1 to engage with the driving-pulleys, which drive it in the direction which causes the carriage O to move forward said carriage in its forward motion, and by means of bar M first throwing down rod I and engaging the speed of the gearing in the movable frame by means of the pressure-pulleys C_5 C_6, and then by means of lever K_2, throwing out the clutch K, releasing the shaft K_1 from the driving-pulley and stopping the carriage, the throwing of lever K_2 engaging the drum R_2, and winding up chain R_3, which rotates cam R_5, thrusting the movable frame away from the cutters, and lowering the hook R_7 on weighted lever R_6 to engage rod I, the motion of the movable frame releasing drum R_2, and allowing the weighted lever R_6 to elevate rod I to a position where it holds the pressure pulleys G_5, G_6 out of contact with the driving belts, and the said frame, in moving away from the cutters also by means of lever C_1, applying the gear which rotates the shaft K_1, to cause the carriage O to move back ward to the starting-point, said gear being released at the end of the return of the carriage by the engagement of the wedge on bar M, with the rod holding the pressure-pulley in contact with the reverse motion belt.

No. 28,325. Middlings Purifier.

(*Epurateur des gruaux.*)

Emil Weiss and Louis Fraenkel, Berlin, Germany, 11th January, 1888; 5 years.

Claim.—1st. In a middlings purifier, the combination, with a closed outer frame, of a rocking and reciprocating shaker or sieve frame, with openings at his tail, sieves in the frame, and an elastic cloth fastened on the top of the same. 2nd. In a middlings purifier, the combination, with a closed outward frame, of a rocking and reciprocating shaker or sieve frame, with openings at his tail, sieves in the frame, and an elastic cloth fastened on the top of the same and on the top of the outward frame. 3rd. In a middlings purifier, the combination, with a closed outward frame, of a rocking and reciprocating shaker or sieve frame, with openings at his tail, sieves in the frame, and an elastic cloth fastened on the top of the same, on the top of the outward frame, and elastic cloth on its sides.

No 28,326. Water Level Alarm for Steam Boilers. (*Indicateur à sonnerie du niveau d'eau pour chaudières à vapeur.*)

Johan L. W. Olson, Copenhagen, Denmark, 11th January, 1888, 5 years.

Claim.—1st. In a water level alarm for steam boilers, the combination of a float having an index hand, and insulated contact bar having contact lugs at its ends limiting the play of the index hand, and an electric circuit having suitable battery and electro-magnetic alarm connected to the contact bar and to the index hand, substantially as and for the purpose shown and set forth. 2nd. In a water level alarm for steam boilers, the combination of a box upon the boiler front having inwardly-doubled flanges holding a non-conducting block, a contact bar secured vertically upon the non-conducting block, and having inwardly bevelled contact lugs at its ends, and having a stop lug at its upper end, a shaft journalled in the boiler front and having an index hand upon its outer end playing between the contact lugs, and having an arm within the boiler provided with a float and an electric circuit having suitable battery, and electro-magnetic alarm bells and connected to the contact bar and to the boiler at its ends, as and for the purpose shown and set forth.

No. 28,327. Two-Wheeled Vehicle.

(*Voiture à deux roues.*)

Byron J. Healey, Kalamazoo, Mich., U. S., 11th January, 1888; 5 years.

Claim.—1st. The combination of the body, the axle and the springs having the upwardly extending free ends with the chains attached to the body, thence extending rearwardly and detachably, and adjustably connecting with said free ends of the springs, whereby the length of the chains, between their end attachment, may be readily increased and diminished, substantially as set forth. 2nd. The combination of the axle, a body or seat bars, springs having the slotted notched end and chains, or suitable flexible connections between the body or seat bars and the slotted end of the springs, substantially as set forth. 3rd. The body, provided with the side brackets, having an inclined row of adjusting holes, springs having free ends, and flexible connections between said body brackets and the ends of the springs, substantially as set forth. 4th. The combination, substantially as set forth, of the axle, a body or seat bars fulcrumed at the forward end, springs located obliquely to the plane of the axle and flexible connections between the free end of said springs and the body or seat bars. 5th. The combination of the axle, a body or seat bars fulcrumed at the forward ends, springs mounted upon the axle and having the free ends, and chains attached to the body or seat-bars, and detachably attached to the free end of the springs, whereby the use of the springs may be dispensed with, and the body sustained by the chains, substantially as set forth.

No. 28,328. Brush Extractor.

(*Extirpateur de broussailles.*)

Samuel Maxim, Wayne, Me., U.S., 11th January, 1888; 5 years.

Claim.—1st. In a brush extractor, the combination, with the curved pointed and apertured jaws A, B, pivoted to each other and provided with handles b, d, of the chain D attached to the jaw A extending through an eye e secured to the jaw B, substantially as described. 2nd. In a brush extractor, the combination of the jaw A, provided with a straight shank a and handle b, the jaw B, provided with the offset shank c and handle d, and the chain D connected with the jaw A and extending through an eye e attached to the jaw B, substantially as described.

No. 28,329. Locomotive Tender Frame.

(*Châssis de tourgon de locomotive*)

Peter Matthews, Escanaba, Mich., U.S., 11th January, 1888; 5 years.

Claim.—1st. In a locomotive tender frame, the combination, with the longitudinal timbers, of the outside frame having end sills supported upon the ends of said longitudinal timbers, draw-heads secured to the end sills, and parallel draw-bars extending the entire length of the frame and coupled to the draw-heads, substantially as described. 2nd. In a locomotive tender frame, the combination, with the outside frame, of the longitudinal timbers secured to transverse braces G beneath the same, and trussed transoms F, having base-plate f located beneath said timbers, and a tie-plate f^1 passing over the central timber and through the intermediate timbers, substantially as described. 3rd In a locomotive tender frame, the combination, with the outside frame, of an inside frame composed of longitudinal timbers extending from end to end thereof, united by transverse braces and truss transoms, and supported partly below the plane of the outside frame, substantially as described.

No. 28,330. Street and other Cars.

(*Char de tramway et autres.*)

Dallas Knowlton, Brantford, Ont., 11th January, 1888; 5 years.

Claim.—1st. In a street railway car, the combination of pinion G and flanges I and K, with wheel N, having pawl O attached to it, the pawl working in ratchet M, also pinion L keyed on axle H, in combination with wheel P having pins R fastened on its sides to work in stud Q, substantially as and for the purposes hereinbefore set forth. 2nd. In a street railway car, the combination of spiral spring S with wheel N, having pawl O working on ratchet M, and wheel P having pins R working on stud Q, substantially as and for the purposes hereinbefore set forth.

No. 28,331. Device for Adjusting the Faces of Millstones. (*Appareil pour rhabiller les meules.*)

John Lamb, Ottawa, Ont., 11th January, 1888, 5 years.

Claim.—1st. A facing arm pivoted centrally on a mill stone, and carrying a paint block, which, when passed around over the face of the stone will indicate its higher parts, substantially as herein shown and described. 2nd. A facing arm having a perforation to fit on a mill stone spindle, and provided with a paint block pivoted to its swinging end, substantially as herein shown and for the purpose set

forth. 3rd. The combination of the facing arm A having the paint block C pivoted to it, and provided with the post D, cap E and adjustable box H, with the steadying block F and bar G, substantially as shown and for the purpose set forth.

No. 28,332. Vector Tip and Holder.

(*Sonde de chirurgie.*)

Allen R. Foote, Cincinnati, Ohio, U.S., 11th January, 1888; 5 years.

Claim.—1st A holder or carrier for vector tips, provided at the end with a female screw thread, and combined with short flexible tips with male screw thread, all as and for the purpose described. 2nd. A holder for vector tips, with an olive formed with a steel female screw die, for cutting a thread upon the soft wire tips as they are turned in, all as and for the purposes set forth. 3rd As an article of manufacture, vector tips of short pieces of flexible wire for insertion in holders, and with one end coated with a medicament, all as and for the purpose set forth. 4th. As an article of manufacture, vector tips of short flexible wire, with small olives or bulbs upon one end, and adapted for insertion in holders, all as and for the purpose set forth.

No. 28,333. Horse Shoe. (*Fer à cheval.*)

Jervis Spencer, Baltimore, Md., U.S., 11th January, 1888; 5 years.

Claim.—1st. A calking piece for a horse shoe made in the form of a bolt, with its upper end enlarged on one or more sides, in combination with a shoe having an aperture of a form to admit the calking piece in one direction, and having a socket in the u.. per part of the shoe, provided with walls to prevent the calking piece from turning, into which the enlarged end of the calking piece will enter when turned, and means below the shoe for fastening and securing the calking piece rigidly in place, substantially as described. 2nd. A calking piece for a horse shoe, made in the form of a bolt, with its upper end enlarged on one or more sides, in combination with a shoe having an aperture of a form to admit the calking piece, and a socket in the upper part of the aperture to hold the calk in place and the nut b^2, ..bstantially as shown. 3rd. A calk for a horse shoe, adapted to ..ter an aperture in the shoe from below the aperture, provided with a socket on the upper side to retain the calking piece, in combination with the pin b^3, passing through the calking piece below the shoe to secure it. 4th. A calking piece for a horse shoe, consisting of a b..lt with an enlarged end, adapted to enter an aperture in the shoe from below the aperture, having a socket on the upper side to retain the enlarged end of the bolt, in combination with a combined nut and calking piece, as shown.

No. 28,334. Button-Hole Attachment for Sewing Machines. (*Machine à coudre faisant les boutonnières.*)

Benjamin Y. Pippey, (assignee of William Schott), New York, N.Y., U.S., 12th January, 1888; 5 years.

Claim.—1st. A button-hole attachment for sewing machines, containing the following elements a carrier plate supporting and guiding a reciprocating foot, a reciprocating foot supporting a single worm adapted for moving the cloth-clamp plate and its attachments to the right and left, means for reciprocating the reciprocating foot and regulating the bite of the stitches, means for regulating the throw of the feed lever and thereby the distance between the stitches, devices for automatically controlling the length of a button-hole, devices for automatically controlling the length of a button-hole bar and thereby the width of the central opening of the button hole, and devices for automatically changing the direction of movement of the cloth-clamp plate and cloth-clamp, all arranged and operating substantially as herein shown and described. 2nd. In a button-hole attachment for sewing machines, the combination of mechanisms for regulating the bite of the stitches, mechanisms for regulating the distance between the stitches, mechanisms for controlling the length of the button-hole, mechanisms for controlling the length of the button-hole bars and consequent width of the central opening of the button-hole, and of mechanisms for arresting the movements of the cloth clamp plate and connections, and for changing the direction of their movements, substantially as herein shown and described. 3rd. In a button-hole attachment for sewing machines, substantially as herein specified, the combination, with the mechanism for transmitting the motion of the needle bar to the cloth-clamp plate, and with the cloth-clamp plate and a square-threaded rack fixed thereon, of a reversible pinion and square-threaded worm set on a shaft, the said worm and pinion receiving motion directly from the feed cog-wheel, and transmitting it to the cloth clamp plate through the medium of the rack, as set forth. 4th In a button-hole attachment for sewing machines, as a means for controlling the length of a button-hole whose ends are to be barred, mechanisms substantially as herein shown and described, whereby the lengthwise motions of the cloth-clamp plate are automatically arrested, and the barring mechanism simultaneously and automatically set in operation, as set forth. 5th. In a button-hole attachment for sewing machines, as a means for controlling the length of the button-hole bars, and the consequent width of the central opening of the button-hole, the combination, with mechanisms, substantially as herein shown and described, for moving the cloth-clamp plate in and out in the direction of its width, of a suitable adjusting device as lever c^2, pin c^3 and adjustable gauge finger m^1, substantially as herein shown and described, for automatically arresting said inward or outward movement of said cloth clamp plate, as soon as the button-hole bar of the predetermined length has been made, as set forth 6th. In a button-hole attachment for sewing machines, the combination, with an adjustable gauge, provided with a stop finger adapted and arranged to be set on the attachment to fix or determine the length of the button hole to be stitched, of suitable mechanisms, substantially as herein shown and described, as stop finger i^3, feed cog-wheel I^1, elbow lever c^2 and pin c^3 carried by said lever, whereby the lengthwise motion of the cloth-clamp plate may be automatically arrested when the button-hole has been stitched its predetermined length on one side, and be held so arrested until the barring of an end of the button-hole is completed, as set forth. 7th. In a button-hole attachment for sewing machines, provided with a cloth-clamp plate arranged to be fed lengthwise by a worm, and provided with suitable mechanisms for moving said plate transversely, also the combination, with the worm-actuating mechanism, of a lever adapted and arranged to throw the said actuating mechanism in and out of gear, the said lever being operated intermittently through suitable mechanism to throw the worm-revolving mechanism out of gear by the lengthwise movement of the said cloth-clamp plate and connections, and to throw the said worm-revolving mechanism intermittently, through suitable mechanism, in gear by the lateral movement of said cloth-clamp plate and connection, substantially as herein shown and described. 8th In a button-hole attachment for sewing machines, mechanisms substantially as herein shown and described, for automatically arresting the right and left movements of the cloth-clamp plate when a side of a button-hole has been stitched, combined with mechanisms, substantially as herein shown and described, for then automatically moving the said plate in the opposite direction in an out to make practicable the formation of the button-hole bars, as set forth. 9th. In a button-hole attachment for sewing machines, the combination, with suitable devices for automatically arresting the inward and outward movement of the cloth-clamp carrying plate, when a button-hole is barred, of a lever adjusted and arranged to be moved by the inward or outward motion of said plate to operate through suitable devices, to cause said plate to move to the right or left as the case may be, as set forth. 10th. In a button-hole attachment for sewing machines, as a means for regulating the length of a button-hole bar, the combination, with suitable devices, substantially as herein shown and described, for moving the cloth-clamp plate lengthwise, and with suitable devices, substantially as herein shown and described, for moving said plate in and out, and with suitable devices, substantially as herein shown and described, for arresting the in and out motions of said plate, of a lever capable of enlargement or expansion, and provided with an expanding screw, substantially as herein shown and described, whereby said lever end may be enlarged, that it may operate to sooner arrest the inward or outward motion of the cloth-clamp plate, as set forth, and thereby cause a shorter button-hole to be made. 11th. The combination, with the feed cog-wheel I^1 and feed lever I^2, of a double pawl f, provided with stud f^1 secured on said lever, a movable pawl-carrying plate H, a finger lever c, and an elbow lever c^2, all arranged and constructed to operate substantially as herein shown and described, whereby, through suitable mechanisms, the rotation of the said cog-wheel is intermittently reversed and arrested when the button-hole attachment is in operation, as set forth 12th. In a button-hole attachment for sewing machines, the combination, with a barring cog-wheel G, pinion G^2 and rack i^4 fixed on plate L, and clamp-carrying plate L^2 sliding on plate L, of a double pawl K and suitable mechanism, substantially as herein shown and described, whereby said pawl is caused to rotate said cog-wheel and pinion, that the said plates L L^2 may be moved in and out, substantially as and for the purposes set forth. 13th. The combination, with the elbow lever c^2, provided with pin c^3, yoke pawl K provided with jaws g and stud g^1, cog-wheel and pinion G^1, G^2 respectively, rack i^4 fixed on plate L, and feed lever I^2 provided with stud f^1, all constructed and arranged substantially as herein shown and described, of the clamp-carrying plate L^2, provided with stop fingers l^4, whereby when the said plate L^2 has moved the desired distance to the left, the said devices are made to move the plates L, L^2 out and in for the barring of the button-hole, as set forth. 14th. The combination, with the elbow lever c^2 provided with pin c^3, yoke pawl K provided with jaws g and stud g^1, cog-wheel and pinion G^1, G^2 respectively, rack i^4 fixed on plate L and feed lever I^2 provided with stud f^1, all constructed and arranged substantially as herein shown and described, of the gauge M^1 provided with stop finger m^1, whereby, when the said plate L^2 has moved the desired distance to the right, the said devices are made to move the plates L^1, L^2 out and in for the barring of the button-hole, as set forth 15th. In a button-hole attachment for sewing machines, the combination, with the clamp-carrying plate, of a graduated gauge adjustably fixed thereon, and provided with a stop finger, substantially as herein shown and described, said gauge being adapted to be adjusted to determine the length of a button-hole, and to automatically operate on other mechanism to cause the stopping of the button-hole edge stitching when desired, as set forth. 16th. In a button-hole attachment for sewing machines, the combination, with the feed lever provided with projecting stud, and with the barring cog-wheel, of a horizontal forked double pawl fixed between the two, and adapted to transmit motion from the former to the latter, whereby the barring mechanism is put in operation, as set forth. 17th. In a button-hole attachment for sewing machines, substantially as herein shown and described, the combination, with the movable cloth-clamp plate, of a button-hole cutter secured thereon, and adapted and arranged to be released from an inoperative to an operative cutting position by the automatic movement of said plate, substantially as herein shown and described. 18th. In a button-hole attachment for sewing machines, provided with a movable cloth-clamp plate, of a button-hole cutter-arm having a vertically movable cutter blade fixed in its head, and adapted to be thrown horizontally into a cutting position when released by means of a spring, substantially as herein shown and described. 19th. In a button-hole attachment to a sewing machine, the combination, with the spring-actuated cutter arm W, and compound locking lever X^1 X^2 fixed on the laterally movable cloth-clamp plate, of an adjustable trigger X^4 fixed on a relatively immovable plate, substantially as herein shown and described, whereby the said compound lever may by contact during a movement of the cloth-clamp plate be caused to unlock and release said ... as set forth 20th. The combination, with the laterally movable ... provided with cutter blade adapted to be operated in a vertical pla.. e, lever and stop adapted to hold said arm in a locked or inoperative position, and spring adapted to throw said arm into an operative position when unlocked, all fixed on the movable cloth-clamp plate, of a hand-adjustable unlocking trigger, substantially as herein shown and described, said trigger being adjustable in fixed position to receive the contact of the locking lever as the cloth-clamp plate moves in one direction, and thereby to effect the unlocking of the cutter-arm, as set forth.

No. 28,335. Machine for Laying Railway Tracks. (*Machine à poser les voies de chemins de fer.*)

Abner Price, Alexander Price, Cornelius Price and Edward D. Moore, (assignees of Daily S. Moore), Chicago, Ill., U. S., 12th January, 1888; 5 years.

Claim—1st. In combination with a car a provided with carrier f, a series of carriers f^1 provided with rollers actuated by chain-belts, said carriers resting on rollers p and mechanism to actuate, and cars to carry said parts, substantially as specified. 2nd. In combination with a series of cars a, a^1, a^2, and carrier f on the car a^1; a series of carriers f^1 on the cars a^2 carried on adjustable rollers p, belts connecting the rollers of said carriers in series of two or more, and mechanism to actuate said belts and rollers of said carriers, substantially as specified. 3rd. In combination with the longitudinally and vertically adjustable carriers f^1, the carriers f, all provided with rollers and connecting belts, flat-cars and actuating mechanism, substantially as specified. 4th. In combination with a series of flat-cars a, a^1, a^2, provided with carriers f and f^1, the hangers h provided with rollers i, substantially as specified. 5th. In combination with a series of flat-cars a, a^1, a^2, provided with carriers f and f^1, the movable rollers i on the car a^1, and the hangers h provided with rollers i, substantially as specified. 6th. In combination with a series of flat-cars a, a^1, a^2, provided with rollers p^2, stakes n and hooks o, a series of carriers f, f^1, provided with rollers l having spurs and chain belts to actuate the same, substantially as specified. 7th. In combination with a series of flat-cars, a series of carriers f, f^1 having rollers and chain-belts and connecting bars f^2, and rollers p, substantially as specified. 8th. In combination with a car a^1 having carriers f, the hangers h provided with braces j and rollers i, substantially as specified. 9th. In combination with a car a^1 having carriers f, the rope k and hangers h provided with braces j and rollers i, substantially as specified.

No. 28,336. Appliance for Shearing or Clipping Animals and for Cutting Hair. (*Appareil pour tondre les bêtes et pour couper le poil.*)

William Bell, Murrurundi, John W. Broomhead, Walter A. Jones, Sydney, and John L. Suckling, Barsham-near-Blandford, N.S.W., 12th January, 1888; 5 years.

Claim.—1st. Operating or actuating the clipping or shearing mechanism by a reciprocating power engine, combined with said mechanism, substantially as herein described. 2nd. The combination and arrangement, with a reciprocating clipping or shearing mechanism of an engine driven by compressed air or other fluid pressure, preferably supplied to it through a hollow handle and flexible or elastic piping, substantially as herein described. 3rd. The combination and arrangement, with clipping or shearing mechanism, and with cylinder and valves for giving reciprocating motion to a piston in said cylinder, of a connecting lever or bar between said piston and the cutter or knife bar of said mechanism, substantially as herein described. 4th. The combination and arrangement, with the shearing or clipping mechanism, of a piston having the cross-pin A^3 with or without thimble A^4, and the lever E having fork E^1, substantially as herein described and explained and as illustrated in the drawings. 5th. The combination and arrangement, with connecting lever E, of the centre pin D^1 and the friction bearing marked E^2, E^3, E^4, E^5 and E^6, substantially as herein described and explained and as illustrated in the drawings. 6th. The combination and arrangement, with a cylinder and valve chest, of the hollow handle, substantially as herein described. 7th. The combination and arrangement, with a cylinder having a central opening for the working of a lever, and with the piston having an open central space and a cross-pin, of ports and valves to supply and exhaust compressed air or other motive power alternately to and from either end of the cylinder, substantially as herein described. 8th. The combination and arrangement, with a divided cylinder, of the construction of piston valves and ports, substantially as herein described and as illustrated in the drawings. 9th. The combination and arrangement, with a divided cylinder, of the construction of piston valves and ports, substantially as herein described and as illustrated in the drawings. 10th. The combination and arrangement, with a divided cylinder, of the construction of D-valve and ports, substantially as herein described and as illustrated in the drawing. 11th. The combination and arrangement, with a divided cylinder, of the construction of tappet valve and ports, substantially as herein described and as illustrated in the drawing. 12th. The combination and arrangement, with the forked lever taking around the piston cross-pin, of means for converting its radial motion into a straight motion, substantially as herein described. 13th. The combination and arrangement, with the lever E and frame A^5, of the centre and friction bearings, substantially as herein described and as illustrated. 14th. The combination and arrangement, with the lever E having fork E^7, of the bridge F^1 and parts marked F^4, F^5, F^2, G^3, substantially as herein described and as illustrated.

No. 28,337. Lawn Mower. (*Faucheuse de pelouse.*)

The Hanika Iron Fence Company, (assignee of Timothy Rogers), Springfield, Ohio, U.S., 12th January, 1888; 5 years.

Claim.—1st. In a lawn mower, the frame consisting of the two side-plates A, each having a semi-circular slot formed therein to receive the spindle of the ground-wheel, and having a bearing for the reel-shaft, the centre or axis of said bearing and the semicircular slot being concentric to each other, substantially as and for the purpose described. 2nd. A lawn mower comprising a frame consisting of two side-plates, having each a semicircular slot formed therein, and having each a bearing for the reel-shaft, the centre of which is concentric to the semicircular slot ground-wheels, the spindles or axis of which are movably secured between the walls of the semicircular slot, a reel having cutters thereon, having a shaft which is mounted in the side-plates, as shown, a clutch and pinion secured to the reel-shaft to engage the ground-wheels, a cutter-bar adjustably secured to the side-plates, and a handle pivotally secured to the said plates, all substantially as described. 3rd. In a lawn mower, the side-plates A having each a semicircular slot a^5 formed therein, and a bearing for the reel-shaft the centre of which is concentric to said slot, each plate having a series of graduating or gauging marks formed in the face thereof, in combination with the ground-wheels, the spindle or axle of which is movably secured between the walls of the semicircular slot a^5, substantially as and for the purpose described. 4th. The combination, with the side-plates A having the semicircular groove or slot a^5 formed therein, of the ground-wheel C having the elongated teeth a^6 extending outward in the direction of the width, or at right angles to the diameter of the wheel, forming a toothed flange, the metal between teeth being cut away to leave openings between adjacent teeth entirely through the flange, substantially as shown, and the hollow spindle c^2, and stud-bolt c^3 to secure the ground-wheel to its side-plate, the spindle c^2 being provided with lugs at its ends to enter the slot a^5, all substantially as and for the purpose set forth. 5th. A form for lawn mowers consisting of the two side-plates A, having each a bearing for the reel-shaft, and a semicircular slot a^5 formed therein concentric to the centre of the reel-shaft, bearing and extending around the lower face of said bearing, and terminating at a point approximately on a horizontal plane with the centre thereof, each plate having a series of radiating gauging marks a^{10} formed on the face thereof to facilitate the accurate adjustment of the ground wheels, substantially as described. 6th. The combination, with the ground wheels C and the side-plates A having the semicircular slot a^5 formed through them, and having the flanges a^8 formed upon the inner faces, as shown, of the supporting and adjustment device for each wheel, consisting of the hollow spindle c^2 extended through the hub of the ground-wheel, flanged at its end annularly as at c^4, and having the projecting lugs c^5 to enter the slot a^5 in the side plate, and a stud-bolt c^3 to extend through the spindle, said stud having a head which rests against the inner side of the frame between the flanges a^8, and being provided with a washer c^6 and a nut c^7 at its outer end to secure and hold the parts in place, all substantially as shown and described. 7th. The frame-plates A having the projecting lugs c^2, c^3 upon their inner sides near their lower edges, as shown, in combination with the cutter-bar E, pivoted to the frame-plates in the rear of cutting edge, and having upwardly projecting lugs e^1 at its either end near the cutting edge, to enter between the lugs c^2, c^3, and set screws extended through the lugs c^2, c^3 and bearing against the lug e^1 of the cutter-bar, to adjust the same and hold it in adjusted position, substantially as shown and described. 8th. The combination of the frame-plates A, having the ratchet-faced projections F^1, the roller-supporting arms F^4 having a ratchet-faced end F^3, the teeth of which engage the teeth of projections F^1, of the frame-plates to which they are removably and adjustably secured by a bolt and nut f^5, as shown, and the roller F pivoted to the opposite end of the arms F^4, all constructed and arranged substantially as shown and described. 9th. The combination, in a lawn mower, of a clutch mechanism consisting of the pinion D having the annular flange d^1 upon its inner face, and loosely mounted upon the reel-shaft, the clutch-half b^2 secured to the reel-shaft having a series of radiating ratchet-teeth upon its face to enter between the walls of the flange d^1, and the cylinder gravity pawls or disks d^5, loosely contained between the teeth and walls. 10th. The combination, with the reel-shaft of a lawn mower, of the pinion D loosely mounted thereon, and having the annular flange d^1 upon its inner face, which flange forms a casing for a clutch-half, the clutch-half b^2 keyed to the reel-shaft, and having the O-G shaped surface teeth with the semicircular pockets d^4 at their ends, and the cylindrical gravity pawls d^5 loosely seated in said pockets, substantially as shown and for the purpose described. 11th. The combination, with the frame-work of a lawn mower, of a handle-bar secured thereto having the two rearwardly projecting arms g^2 separated at their ends, and having the radial slots g^3 therein, which slots register with each other, and a handle pivoted to the handle-bar and adjustably secured between the arms g^2 by a bolt, substantially as described. 12th. An adjustable device for lawn mowers consisting of the tubular handle-bar G secured to the frame, and having the outwardly projecting arms g^2 slotted at their ends, as described, the handle I adjustably secured between the arms a^2 by a bolt extended through the slots g^3 in the arms g^2, and through the handle, and the two clip irons g^6 to engage the handle-bar G and end of the handle, substantially as shown and described.

No. 28,338. Gas-Engine. (*Machine à gaz.*)

William E. Hale, Chicago, Ill., (assignee of Cyrus W. Baldwin, Yonkers, N.Y.), U.S., 12th January, 1888; 5 years.

Claim.—1st. The combination, substantially as hereinbefore set forth, of the power-cylinder of a gas-engine provided with an inlet-port and with an exhaust-port at a distance from the inlet-port, a power piston which passes across the exhaust port on its forward movement from the inlet-port, and a deflector arranged in the vicinity of the inlet-port to prevent the direct passage of the charge from the inlet to the exhaust port, substantially as set forth. 2nd. The combination of a cylinder, provided with inlet and outlet ports near its opposite ends, with an intermediate deflector arranged to be struck by the inflowing gases to prevent the direct passing thereof to the outlet-port, substantially as described. 3rd. The combination, with the power-cylinder having the exhaust-port near one end, of a deflector arranged near the opposite end to prevent the forward flow of the new charge directly to the exhaust, substantially as described. 4th. The combination of a cylinder having an outlet-port at one end, and an inlet-port at the opposite end, and a deflector arranged in front of the inlet-port, substantially as set forth. 5th. The combination, with the power-cylinder having an inlet-port, of a deflector corresponding in outline with the outline of said port, substantially as set forth. 6th. The combination of a cylinder having an inlet and outlet ports, a reservoir and chamber, and means for supplying the same with mixed gases under pressure, and a deflector arranged within the cylinder in position to be struck by the inflowing gases on their passage to the exhaust, substantially as set forth. 7th. The combination of the cylinder having a power-piston, and an exhaust-port near the forward end, and an inlet-port near the opposite end, of a plate arranged adjacent to said inlet-port and supported adjustably in its position, substantially as described. 8th. The combination,

with the power-cylinder and piston, and with the exhaust and inlet ports near opposite ends of the cylinder, of a deflector and an igniting device arranged at the rear of the deflector, substantially as described. 9th. The combination, with the cylinder and head of a gas-engine, of a detachable block fitting within the cylinder, and provided with a port and passage, substantially as described. 10th. The combination, with the cylinder provided with inlet and exhaust ports adjacent to opposite ends and with a power piston, of a block inserted detachably in the end of the cylinder, and provided with a port and channel, and a deflector carried by said block, substantially as described. 11th. The combination of a power-cylinder and piston, an inlet-port, a chamber or reservoir for the explosive mixture, a valve controlling the inlet-port and the flow of the mixture into the said cylinder, and a governor and connections, whereby the movements of the said valve and the quantity of mixture admitted to the cylinder are varied by the governor, substantially as set forth. 12th. The combination, with the power-cylinder and piston, of a charge reservoir or chamber, a channel and automatic valve operated by the fluid between the reservoir and cylinder, and a governor connected to vary the action of said valve, substantially as set forth. 13th. The combination of a power piston and cylinder, a charge reservoir or chamber and an automatic valve controlling the inlet-port, and the flow of the mixture to the cylinder and automatic controlling devices, substantially as described, whereby the movements of the valve are regulated to proportion the charge admitted to the power-cylinder to the work to be done, substantially as described. 14th. The combination, with a valve operated by the fluid in a passage through which the mixture flows under pressure to the power-cylinder, of controlling devices automatically regulating the extent of opening the valve or period of time it remains open according to the work to be done, substantially as described. 15th. The combination, with the power-cylinder, its piston, and means of igniting the charge in said cylinder, of a valve controlling the inflow of the charge to the power-cylinder, and governor to automatically vary the lift of the valve, substantially as set forth. 16th. The combination of the power cylinder, means of igniting the charge therein, reservoir containing a mixture of gas and air, connecting-passage valve operated by the fluid provided with a stem and spring governor and wedge, controlled by the governor, substantially as described. 17th. The combination, with the reservoir, of a valve casing, provided with air and gas inlet ports, of areas proportioned to the desired relative proportions of air and gas, and a valve constructed to open and close both ports simultaneously to regulate the volume of the gases without altering the proportions, substantially as specified. 18th. The combination, with the reservoir and the power-cylinder of a valve casing, and a valve controlled by a governor, and controlling the flow of the mixture to the engine, the valve and casing having air and gas inlet ports proportioned to admit the gas and air in proper relative quantities whatever may be the degree to which the ports are opened, substantially as set forth. 19th. The combination, with the power-cylinder and reservoir, of a valve-casing, and a valve constructed to regulate the volume without altering the relative proportions of the gases, a valve in the passage between the reservoir and cylinder, and a governor, and connections between the governor and both valves, whereby the volume of mixed gases admitted to the reservoir, and that of the mixture discharged into the cylinder, is regulated by the governor, substantially as set forth. 20th. The combination, with the reservoir and the power-cylinder, of a valve-casing provided with ports *p*, *r*, *t*, and a valve having ports *v*, *u* of different areas, constructed and arranged to maintain the relative areas of the gas and air ports, whatever may be the extent to which the valve is opened, substantially as described 21st. The combination, with the pump power-cylinder inlet-port and valve closing said port, of an air-inlet and valve arranged to permit the air to pass inward beneath said valve when the pressure in the reservoir is reduced, substantially as described 22nd. The combination of the power-cylinder reservoir communicating passage valve in said communicating passage, and air-port and air-valve communicating with said passage adjacent to the valve in the same, substantially as set forth. 23rd. The combination, with a casing or reservoir, and with a pump for exhausting the contents thereof, of a perforated pipe or tube communicating with a gas-pipe, and arranged between an air-port, and a port communicating with the reservoir to leave a narrow air-passage adjacent to the perforations in the gas-pipe, substantially as set forth. 24th. The combination, with a casing or reservoir having an inlet provided with a valve, of a casing provided with an air-inlet and narrow air-passage between the air inlet and the valve, and a gas pipe communicating with perforations opposite the said narrow passage, substantially as and for the purpose set forth. 25th. The combination of a power cylinder and piston, a reservoir, a pump connected to supply the reservoir with gas and air, and a perforated gas-pipe arranged opposite a contracted passage through which the air flows to the reservoir, substantially as set forth. 26th. The combination, with the power cylinder an piston, of a reservoir provided with inlet-ports and valve, a casing containing a chamber communicating with said inlet ports, and provided with air ports closed by a valve, and a perforated gas pipe arranged between the air ports and inlet ports opposite a narrow passage, and a pump connected to draw the air and gas into the reservoir upon its movement in one direction, and to compress the mixture upon its opposite movement, substantially as described.

No. 28,339. Gas Engine. *(Machine à gaz.)*

William E. Hale, Chicago, Ill., (assignee of Cyrus W. Baldwin, Yonkers, N.Y.), U.S., 12th January, 1888, 5 years.

Claim.—1st. The within described improvement in regulating gas engines, operated by means of a substantially uniform explosive mixture of air and gas, consisting in confining such uniform mixture in a reservoir, and automatically admitting regulated charges of said mixture into the power cylinder and exploding them therein, all substantially as described 2nd. The combination, with the reservoir, of means for supplying it with a substantially uniform mixture of air and gas, a power-cylinder connecting passage and valve therein, an automatic valve operating mechanism driven from the engine to govern the volume of the charges, substantially as described. 3rd. The within described improvement in regulating gas engines, consisting in supplying to the cylinder from a reservoir varying volumes of an explosive mixture of uniform quality until the greater portion of the resistance is thrown off, and then reducing the proportion of gas in the mixture, substantially as and for the purpose set forth. 4th. The improvement in regulating gas engines, consisting in maintaining the uniform high explosive quality of the charges during the operation of the engine under high resistance, and in varying the quality of the charge when the greater portion of the resistance is thrown off, substantially as described. 5th. The improvement in regulating gas engines, consisting in automatically varying the quantity of a uniform highly explosive mixture during the operations under high resistance, and in automatically varying the proportions of gas and air when the greater portion of the resistance is thrown off, substantially as described. 6th. The improvement in regulating gas engines, consisting in regulating automatically the volumes of the charges of uniform mixture under varying high resistance, and the quality of the mixture under low resistance and in cutting off automatically the supply of air and gas when the engine is moving practically without resistance, substantially as described. 7th. The combination, with the cylinder and piston of a gas engine, of a supply chamber and means for regulating the flow of gas and air thereto, a valve and a governor and connections whereby the mixture is maintained constant during the operations of the engine under high resistance, but the charges are varied in quantity, and whereby the quality of the mixture is varied after a determined proportion of the resistance is thrown off, substantially as described. 8th. The combination, with the cylinder, piston, reservoir, valve, governor and regulating device of a gas engine, of a gas regulating device and connections with the governor, whereby the latter operates the said device to reduce the supply of gas, only after a determined resistance has been cut off from the engine, substantially as described. 9th The combination, with the cylinder, piston, reservoir, valve, governor and charge regulating devices, of a valve controlling the flow of gas to the reservoir and connections between the valve and governor, substantially as described. 10th. The combination of the reservoir, charge regulating devices of a gas engine, of a gas inlet pipe, gas cock and connections between the cock and the charge regulating devices, substantially as described. 11th. The combination, with the shaft *k* connected with the device regulating the volumes of the charges admitted to the cylinder, of a gas valve and connections whereby the movement of the shaft only when beyond a determined extent insures the reduction of the proportion of the gas in the explosive mixture, substantially as described. 12th. The combination of the shaft *k*, connected with devices regulating the movements of the valve *h*, stop 24, lever 22, gas cock H and connections between the latter and the lever, substantially as described. 13th. The combination, of the lever 22, and devices for regulating the volumes of the charges having a limited movement independent of said lever, and a gas cock connected with said lever, substantially as described. 14th. The combination of the reservoir, gas cock, lever connected thereto, and charge regulating devices arranged to operate independent of the lever and to operate the latter after having a limited motion, substantially as described. 15th. The gas cock provided with a port, arranged to gradually reduce the charge as the cock is moved, and with a second port arranged and proportioned to maintain the flow of the gas after it has been reduced to a minimum, substantially as described. 16th. The gas plug provided with the ports 29, 30, arranged in respect to the case having an inlet and outlet, and in the pipe leading to the reservoir of a gas engine, substantially as described. 17th. A cut-off combined with an automatic operating device, charge controlling devices, and with the reservoir of a gas engine, to cut off the supply to the reservoir when the engine exceeds a determined speed, substantially as described. 18th. The combination, with the cylinder, piston, reservoir, inlet valve, and appliances to control the charge of a gas engine, of a cut-off valve connected with the controlling devices to be closed thereby, when the speed of the engine exceeds predetermined limits, substantially as described. 19th. The combination of the lever 22 connected to operate the gas valve, and a cut-off valve also connected to be operated by said lever, substantially as described. 20th. The combination of the gas valve, operating lever, cut-off valve, and connections, whereby the cut-off valve is closed by said lever after the gas valve has been moved to its maximum extent, substantially as described. 21st. The combination, with the reservoir F, of a valve plate, cut-off valve 5, gas inlet 62, gas cock H, and governor, and connections, whereby the cut-off valve is closed automatically after the gas valve has been moved to its maximum extent, substantially as described. 22nd. The combination, with the valve of a gas engine, of a pivoted vibrating lever having a wedge-shaped end to adjust the valve, and connected with the governing devices, substantially as described. 23rd. The combination of the revolving heads, disk shaft carrying the disk, governor for altering the relative positions of the heads and disk, lever connected with the disk, and curved wedge carried by the lever, substantially as described. 24th. The combination, with the wedge and governing devices of an engine, of a lever carrying the wedge, a pin e extending through the lever, and a spring bearing for the lever, and an adjusting device for the spring, substantially as described. 25th The combination, with the cylinder of a gas engine provided with a piston, of terminals in an electrical circuit located within the cylinder, and means, substantially as described, whereby the terminals are separated by the action of the piston as it reaches the limit of its movement in one direction, substantially as set forth. 26th. In an electrical igniter for gas engines, the combination, with an explosion chamber, of terminals, one spring actuated normally in circuit, and a finger carried by the piston head for breaking the circuit, substantially as set forth 27th. In an electrical igniter for gas engines, the combination, with a cylinder, of terminals located within the explosion chamber, one movable and spring actuated, and the other stationary, and a finger carried by the piston in position to make contact with the movable terminal, for the purpose set forth. 28th. The combination, with the cylinder of a gas engine, of a fixed and movable spring actuated electrical terminal normally in contact, and means operated by the piston for breaking said contact when the charge is to be ignited, substantially as set forth. 29th. The combination, with the cylinder of a gas engine, of an insulated fixed terminal, a movable terminal connected with the electric circuit and normally bearing upon the fixed terminal, and a

finger carried by the piston in position to make contact with the movable terminal, substantially as set forth. 30th The combination with a gas engine cylinder, of a retarding plate, whereby the new charge flowing into the rear end of the cylinder is held therein during the opening of the exhaust, substantially as described 31st. The combination, with the cylinder and separated exhaust and inlet ports, of means whereby to permit the outflow of the spent gases while holding back the new charge, substantially as described 32nd A gas engine cylinder having a retarding device, and a rounded inner end arranged to deflect the gases projected to, and flowing from, the retarder, substantially as described. 33rd. The combination of the cylinder, escape port, inlet port, plate opposite the inlet port, and rounded inner end of the cylinder, all arranged to operate as set forth 34th. The combination of the cylinder, inlet and outlet ports, intermediate plate, circuit breaker between said plate and the rear of the cylinder, and contact finger carried by the piston, substantially as described.

No. 28,340. Whiffletree Spring and Dratt Equalizer. *(Ressort à palonnier et volée mobile de arrière de voiture.)*

Edward C. Currey, New York, N Y and Alphonso W. Hager, Chicago, Ill., U.S., 12th January, 1888, 5 years.

Claim.—1st In a draft equalizer, the combination of the casing secured to the tongue of a vehicle, and having corresponding longitudinal slots in its upper and lower plates, the coiled spring within the casing, the vibrating or oscillating plate pressed rearward by said spring, and the equalizing bar attached to, and moving with, said plate, as set forth. 2nd. In a draft-equalizer secured to the tongue of a vehicle, and provided with the corresponding longitudinal slots in its upper and and lower plates, the longitudinal coiled spring within the casing, the bearing block provided with a vertical groove on its rear surface semicircular in cross section, and on its front surface with a retaining rod or shank extending within the coiled spring, the oscillating plate bearing at its centre against said block, and the equalizing bar attached to, and moving with, said plate, all constructed and arranged substantially as set forth and for the purpose specified 3rd In a draft-equalizer, the combination, with the casing, coiled spring and bearing block, all constructed substantially as described, of the oscillating plate bearing against the said block, and provided near its ends with the similar rearward extending engaging-pins or studs, the equalizing bar provided with the recesses at equal distances from its centre, and the plate secured t the front surface of said bar, and provided with the vertical slots overlying the recesses in the equalizing bar, and engaging the pins on the oscillating plate, so that the equalizing bar can have a vertical vibration on said plate, substantially as specified. 4th. In a draft-equalizer, the combination, with the equalizing bar, the locking block and mechanism to hold the equalizing bar in place, all constructed and arranged substantially as described, of the casing composed of a base-plate secured to the tongue of a vehicle, and a top plate pivoted at its front end on said base-plate so that it can be turned laterally thereon, for the purpose of easily removing the equalizing bar and adjacent parts, substantially as specified. 5th. In a draft-equalizer, the combination, with the casing constructed, substantially as described, and the locking block or section pivoted or hinged to the rear end of the top plate of said casing, and provided on the inner surfaces of its sides with the inwardly-standing projections of the latch provided at its lower end with trunnions having bearings in proper recesses in the base-plate of the casing and having at suitable points on its edges locking studs or pins which engage over the projections on the locking block, when the latch is turned forward, substantially as specified 6th. In a draft-equalizer, the combination, with the casing and locking block constructed, substantially as described, of the hinged or pivoted latch having its upper end formed into a tongue, the yoke attached to, and vibrating on, a transverse bar running from side to side of the locking bar, and arranged to press the yoke over the tongue of the latch so as to prevent the latter from moving backward, substantially as specified. 7th. In a draft-equalizer, the combination, with the slotted casing, equalizing bar, bearing block, and coiled spring, all constructed substantially as described, of the pivotal bolt, the sleeve surrounding said bolt, and the plate made integral with said sleeve and engaged to the equalizing bar, substantially as specified. 8th. In a draft-equalizer, the combination, with the casing having its upper plate provided with a longitudinal slot, and its lower or base-plate provided with a corresponding slot rabbetted on the edges of its lower surfaces to form recesses with the upper surface of the tongue of a vehicle, to which the casing is secured, of the pivotal bolt with the edges of its head resting in said recesses, and the nut on the upper end of the bolt, and resting on the upper surface of the top plate of the casing, substantially as specified. 9th. In a draft-equalizer, the combination, with the casing secured to the tongue of a vehicle having a longitudinal slot in its upper plate, and a corresponding slot in its lower or base-plate which slot is rabbetted on the edges of its under surface so as to form side recesses with the upper surface of the tongue of the vehicle, of the pivotal bolt with the edges of its head resting and sliding in said recesses, the nut on the upper end of the bolt, and resting on the outer surface of the upper plate of the casing, the sleeve surrounding said bolt the plate made integral with the sleeve and engaged as described, to the the equalizing bar and the bearing block and coiled spring, all constructed and arranged substantially as and for the purpose specified. 10th. The herein described draft-equalizer composed of the casing B having the upper and lower plates C and D slotted longitudinally as described, the locking block E hinged or pivoted to the rear end of the said upper plate, the latch G the spring controlled yoke H, the equalizing bar J, and plate I secured thereto, the pivotal bolt K and nut K, the sleeve L and ears *l. l.* made integral therewith and engaged to the equalizing bar, the bearing block M provided with the rod or shank N and the coiled spring O, all constructed and arranged substantially as specified.

No. 28,341. Waggon Jack. *(Chèvre de carrosserie)*

Anthony O. Stiveson and Daniel A. Russell, Pomeroy, Ohio, U. S., 12th January, 1888; 5 years.

Claim.—The combination of base A having stationary standard B, provided with an inclined front edge, a broad triangular lower portion, and a straight upper end, the sliding section C fitting to the inclined edge of the standard, and provided with notches at its upper end, and holes *d* and shoulder *b* at its lower end, a re-enforcing strip of metal extending over the said notches, and holes, straps D, D1 for connecting the sliding section to the stationary standard, pendent hook K fitting into holes *d*, stirrup F engaging shoulder *b*, the lever G with branched ends G1 engaging the stirrup, and a detent for locking the lever in position, substantially as and for the purpose described.

No. 28,342. Heel Mould. *(Moule à talon.)*

Edward J LeGay, Boston (assignee of Albion L. Mitchell, Lynn), Mass., U.S., 12th January, 1888, 5 years.

Claim.—1st. A heel mould member composed of rigid sections or holders c, c, hinged together, and elastic material secured to said holders, and having a moulding surface which is the converse of the external shape of the heel to be moulded. 2nd. In a heel mould, the combination of the heel-shaped rigid male mould *a*, and the female mould composed of the rigid sections c, c, hinged together, and the elastic material secured to said sections and having a moulding surface which is the converse of the shape of the heel, as set forth 3rd. A heel mould member composed of the rigid sections or holders c, c, hinged together, and having internal recesses and yielding rubber secured to the rigid sections in said recesses, and having a moulding surface which is the converse of the shape of the heel to be moulded, as set forth.

No. 28,343. Adjustable Sled Runner. *(Patin mobile de traineau.)*

John C Frey and George A. Miller, Rochester, N. Y., U. S., 12th January, 1888; 15 years.

Claim —In combination with the runner R, box B and knee K, the laterally adjustable sliding connection between the box and knee, formed by a flange T upon the one sliding in a corresponding groove G in the other, and securable by the set-screw S or its equivalent, substantially as and for the purposes shown and described.

No. 28,344. Apparatus for Drying Glutinous, Fibrous, Granular and other Materials *(Appareil des dessications des substances glutineuses, fibreuses, granuleuses et autres.)*

Edward Robinson, London Eng., 13th January, 1888; 5 years.

Claim.—1st. The combination, with a revolving cylinder working a horizontal, or nearly horizontal plane, for containing the materials to be dried, of a stationary central tube having nozzles directed downwards, and constructed substantially as set forth for conducting heated air into and among the materials to be dried, and of two sets of radiating rods or bars (the one set rotating and the other set stationary) provided with engaging or interdigitating tines or projections for breaking up, separating and distributing the material, and maintaining it in constant motion, so as to continually expose a fresh surface to the heated air discharged through the nozzle of the stationary central tube, substantially as hereinbefore described. 2nd. The combination of a rotatory system of wheels, composed of skeleton frames or boxes containing the materials to be dried, with a central or internal tube, having nozzles for discharging heated air between the wheels formed by the said skeleton frames or boxes and the material to be dried, substantially as hereinbefore described. 3rd. In an apparatus for drying glutinous, fibrous, granular and other metarials, the employment of nozzles directed downwards for conducting heated air into and amongst the materials to be dried, substantially as hereinbefore described.

No. 28,345. Railroad Track and Rail. *(Voie et rail de chemin de fer.)*

Bernard S. Doran, Johnstown, Pa., U.S., 13th January, 1888; 5 years.

Claim.—1st The combination, with the railway rails provided with recesses or notches in the meeting ends of their base flanges, of the shouldered slide plates, the central clamping chair having a seat for the rails and slide-plates, and inwardly turned parts above and bearing on the horizontal flanges of the slide plates, and the pin passing through the floor of the chair with its head seated in the recesses in the edges of the meeting ends of the rails, substantially as specified. 2nd. The combination, with the railway rails, the slide plates provided with the vertical web plates, and the shouldered horizontal flanges having the tapered edges on one side of said shoulders, and the central clamp chair having a seat with inclined edges to correspond with the inclined edges of the flanges, substantially as specified.

No. 28,346. Planting Attachment. *(Appareil semeur.)*

John A. Cumming, Crawford, Neb., U.S., 13th January, 1888, 5 years.

Claim.—1st. In a planting attachment for ploughs, the combination of a plough, a frame secured to the beam and having the planting mechanism, and a forked frame 39 having a flat spring arm 40 secured to the frame, and having its forward end secured to the forward end of the plough beam by a vertically adjustable brace or bar, and having a drive wheel journalled in it, connected to and driving the planting mechanism, as and for the purpose shown and set forth. 2nd. In combination with a plough, a rectangular frame clipped to the plough beam, and having a hopper and a rocking seed slide, an opening shovel having a bent standard secured with the bent end to the side piece of the frame, by means of a clip and a hooked screw bolt, and having the discharge pipe secured to it, and a forked frame having its upper end yieldingly secured to the frame, and

having its forward end supported below the forward end of the plough beam, and having a drive-wheel journalled in it and connected to the planting mechanism, as and for the purposes shown and set forth. 3rd In a planting attachment for ploughs, the combination of a drive-wheel, having equi-distant studs, or transverse ribs upon its rim, with an additional rim, composed of curved blocks fitting between the studs or ribs, and a flexible band having the blocks secured to it, and having means for securing its ends together and to the rim of the wheel, as and for the purpose shown and set forth. 4th. In a planting attachment, the combination of a narrow casing having the hopper secured to it, a segmental seed slide pivoted to rock upon a shaft ... the middle of its straight under side in the casing, and formed with two notches or recesses in its periphery, and with two pairs of knives at the sides of the recesses, and with a kerf in its segmental side and a longitudinally slotted pronged flat bar, having its slotted portion fitting upon a bolt in the middle of the kerf, and having its middle pivoted upon a transverse bolt in the casing, as and for the purpose shown and set forth. 5th. A planting attachment for ploughs, comprising the laterally adjustable frame adapted to be secured to, and project beyond one side of the plough beam, said frame carrying a hopper and seeding mechanism therein, the seed spout depending from the frame, the furrow opener attached thereto, and the forward extending fork, frame or arm, having the operating wheel connected to the seed mechanism, and the brace 43 to connect the forked arm to the front end of the beam, substantially as described.

No. 28,347. Combined Stove and Straw Burner. (*Poêle et foyer consumant la paille.*)

Thomas J McBride, Winnipeg, Man., 13th January, 1888; 5 years.

Claim.—1st. A stove oven having a flue K and divided flues K1, K2, inlet throat J, provided with dampers D, D, and having an outlet provided with damper F into smoke stack G, as set forth. 2nd. A straw burner attachment, consisting of a combustion chamber C, having a grate at the bottom and provided with a collar B at the smoke outlet, and a removable straw drum N seated on the combustion chamber and provided with a gas duct H, substantially as set forth. 3rd. The combination of the stove oven E, having at the smoke inlet A, throat J, provided with dampers D, D and a collar A, and having an outlet into the smoke stack G, a combustion chamber C, having a smoke outlet, provided with a collar B to telescope collar A, a removable straw drum N, provided with gas duct H inside or outside, and an ash receptacle M, substantially as and for the purposes described and set forth.

No. 28,348. Horse Shoe. (*Fer à cheval.*)

John B. White, Buffalo, N.Y., U.S., 13th January, 1888; 5 years.

Claim.—1st. An improved horse-shoe, having calks of substantially uniform thickness from top to bottom, one or more of the calks being braced by stays S adapted to wear away with the calks, substantially as and for the purpose specified. 2nd. An improved sharp calked horse-shoe, having thin calks integral with the body of the shoe, perpendicular to its sole, and of substantially uniform thickness from top to bottom, the toe-calk being at right angles to the direction of hauling strain, and braced in front by stays integral therewith, and adapted to wear away with the calks, substantially as herein specified 3rd. An improved sharp calked horse-shoe, having thin calks integral with the body of the shoe, perpendicular to its sole, and of substantially uniform thickness from top to bottom, the heel calks being longitudinal and supported externally by ogee edges projecting beyond them, substantially as herein specified.

No. 28,349. Nut Lock (*Arrête-écrou.*)

David Steiner, Adamsburg, Penn., U.S., 13th January, 1888; 5 years.

Claim.—1st. The combination, with the two bolts, the nuts screwed thereon and the washer mounted upon the bolts and held in place by the nuts, and provided with retaining lips projecting toward each other and at right angles to the edges of the nuts, of the locking slide adapted to be slipped down between the approximate edges of nuts and held in place by the retaining lips, substantially as described. 2nd. The combination, with the three bolts, the nuts, and the washers mounted upon the bolts and held in place by the nuts, the end washers having retaining lips projecting toward the middle washer, and the middle washer having retaining lips extending toward the end washers, substantially as shown, of the two independent locking slides located on opposite sides and between the middle and end washers, and held in place by said retaining lips, whereby one or both slides can be removed or replaced, substantially as set forth.

No. 28,350. Wheel. (*Roue.*)

Thomas Groom, Wellington, Eng., 13th January, 1888, 5 years

Claim.—1st. The improvements in wheels, having felloes halved together at their ends, with the hollowed and rounded corners, and resting at each end upon a spoke, whether wood or metal, with a pin either separate or fast passing through each half, substantially as and for the purpose herein set forth. 2nd In wheels having felloes halved together at their ends, and secured to the spokes by pins passing through them, the combination therewith of circular side plates rivetted through the felloes, and substantially as herein set forth.

No. 28,351. Ore Crushing Machine.

(*Machine à broyer le minerai.*)

Jacob C. Wiswell, Medford, Mass., U.S., 13th January, 1888, 5 years.

Claim.—1st. The combination of the bed or trough, the driving shaft, the rotary frame having slots or guides *e*, and adapted to rotate with, and move vertically on the shaft *g*, the collar *f* also adapted to move vertically on said shaft, and the rolls *a* and their arbors *b*, the latter being journalled in the collar *f* and in sliding boxes in the slots of the frame *e*, as set forth. 2nd. The frame *e*, adapted to move vertically on, and rotate with the driving shaft, and provided with the slots or guides *e*, and the oil cups over said slots, combined with the boxes *a* adapted to slide in said guides, receiving oil from said cups, and the roll arbors journalled in said bars, as set forth. 3rd. The bed or trough composed of the supporting portion, and the wearing plates detachably connected thereto, as set forth. 4th The combination of the wearing plates, having bolts in their lower sides, and the supporting portion having holes to receive said bolts, as set forth. 5th. The combination of the wearing plates and the supporting portion composed of detachably connected sections, as set forth. 6th. The combination, with the circular bed and the roll adapted to move thereon, of the rakes or scrapers moving with the rolls and in contact with the bed, as set forth. 7th The combination, with the rotary frame *e* and bed N, of the standards A secured to said frame, the reversible arms B pivoted to said standards, and the rakes D or the scrapers D1 detachably secured to said arms and bearing on the bed, as set forth. 8th. The bed or trough composed of the supporting portion, and the wearing plates detachably connected thereto, as set forth. 9th. The combination of the wearing plates having bolts on their under sides, and the supporting portion having holes to receive said bolts, as set forth. 10th. The combination of the wearing plates, and the supporting portion composed of detachably connected sections, as set forth.

No. 28,352. Vehicle Spring. (*Ressort de voiture.*)

Charles H. Twist, New York, N.Y., U.S., 13th January, 1888; 5 years.

Claim.—1st. A vehicle spring having one or more leaves, which are concave-convex, or corrugated in cross-section, midway between the ends, the same being made to taper toward the ends from a concavo-convex surface to a flat surface, and the ends whereof are flat, substantially as and for the purpose set forth. 2nd. In a vehicle spring, a leaf made plano-concave in cross-section, midway between the ends, the concave surface whereof is made to taper into a flat surface, the ends of such leaf being made flat, substantially as described. 3rd. A vehicle spring, having its longest leaf made flat, and a leaf above the same made plano-concave in cross-section, midway between the ends, the concave surface of said leaf being made to taper into a flat surface at the ends, substantially as described.

No. 28,353. Paper Pulp Digester.

(*Pourrissoir de pâte à papier.*)

Solomon R. Wagg, Appleton, Wis., U.S., 13th January, 1888; 5 years.

Claim—1st. The process, substantially as hereinbefore set forth, of lining metal boilers with lead, consisting in coating one side of a sheet of metal with solder that melts at a lower temperature, placing said sheet of lead within the boiler so as to entirely cover its inner walls with the solder adjacent to said wall, introducing comparatively cool air under pressure until the sheet of lead is forced compactly against the sides of the boiler shell, then applying heat sufficient to melt the solder but not the lead, until the lining and the shell are fused together, and finally lowering the temperature and reducing the pressure 2nd. The process, substantially as hereinbefore set forth, of lining boiler-shells, consisting in coating a thin sheet of lead with solder on one side, and applying it to the interior walls of the boiler until they are covered, introducing air of a temperature below the melting point of the solder and under pressure, until the lead has been forced into contact with the internal surface of the boiler, then raising the temperature of said air while still continuing said pressure to the point at which the solder will melt, finally cooling said air and then reducing the pressure. 3rd. The combination, substantially as hereinbefore set forth, of a boiler-shell, a lining therefore, and a cushion or packing of any solid and firm nature between said lining and the shell. 4th. The combination, substantially as hereinbefore set forth, of a boiler-shell, an internal lining or coating of lead, a cushion or lining of any slightly elastic and solid and firm nature next to said coating, and an interior lining of tiles seated upon said cushion. 5th. The combination, substantially as hereinbefore set forth, of a boiler-shell, a cushion or packing adjacent to the inner walls thereof composed of asbestos, and an internal lining of non-corrosive material seated upon said cushion. 6th. The combination, substantially as hereinbefore set forth, of a metal boiler-shell, a cushion or packing of an elastic yet firm and solid nature lining the internal walls thereof, and an interior lining composed of slabs or tiles of non-corrosive material. 7th. The combination, substantially as hereinbefore set forth, of a metal shell, asbestos packing lining the interior walls thereof, tiles forming the interior lining, and a non-corrosive tamping filling the seams between said tiles. 8th. A boiler lining consisting of tiles, arched and keyed by means of seams of tamping lead or equivalent non-corrosive material. 9th. The combination, substantially as hereinbefore set forth, to form a boiler lining, of a series of tiles having chamfered or under-cut edges, and a caulking of lead or equivalent material filling the seams between the tile edges. 10th. The combination, substantially as hereinbefore set forth, of a metal boiler-shell, tiles held thereto by bolts, non-corrosive packing covering the heads of said bolts, and seams of lead or equivalent non-corrosive material between the adjacent edges of the tiles. 11th. The combination, substantially as hereinbefore set forth, of a boiler-shell, a series of tiles forming the lining, and having under cut or chamfered edges, lead caking filling the seams between said edges, and bolts having their heads sunk in said lead packing, and securing tiles and seams to the boiler-shell. 12th. The combination, substantially as hereinbefore set forth, of the tiles, the angle irons, the lead packing and the boiler-shell. 13th. The combination, substantially as hereinbefore set forth, of the tiles having chamfered edges, the angle-iron ring surrounding man-holes or apertures in the shell, the lead packing between the perpendicular flanges of said rings and the tiles, and the lead sheet covering the rings and apertures. 14th The combination, substantially as hereinbefore set forth, of a boiler having the interior surface divided into sections by intersecting bars, and a lining of bricks or tiles having the joints tamped with lead or other

non-corrosive material, substantially as described. 15th. The combination of the boiler-shell, the lining of lead or porcelain coating on boiler-shell in box of lead, the tides and bolts having a flattened side and washer creased on the under side, to allow air or acid to escape from between the linings, as set forth.

No. 28,354. Bob-Sleigh. (*Traîneau-Jumeau.*)

George A. Bain, Woodstock, Ont., 13th January, 1888; 5 years

Claim.—A double bob-sleigh in which the front end of the long reach is connected to the bolster of the front bob by a universal joint, the rear end of the said reach being braced to the back bolster, which is supported on rubbing-blocks connected to the hind bob, and having their top surfaces longitudinally curved to correspond with the movement of the hind bob as it passes over rough ground or pitch-holes, the front end of the bob being connected to the long reach, substantially as and for the purpose specified.

No. 28,355. Explosive Compound.

(*Composition explosive.*)

Lucien G. Heusschen, Paris, France, 13th January, 1888; 5 years.

Claim.—1st. An explosive, substantially as described, and containing coal oil and glycerine, together with nitrate of potash or soda, a sulphate and sulphuric acid. 2nd. An explosive consisting of nitrate of potash or soda, sulphuric acid, sulphate of iron or other sulphate, coal oil, glycerine, carbon and sulphur, as herein set forth.

No. 28,356. Hay Fork. (*Fourche à foin.*)

James A. Buchanan, Dorchester Station, and William Mathieson, St. Mary, Ont., 13th January, 1888; 5 years.

Claim.—1st. In a hay-fork, a double locking attachment of the trip-lever for locking the points both ways instead of one way only, and consisting of the above described method of rivetting the trip lever D, separately at two points *a* and *b*, to the cross-bar F and strap G, or to frame A and cross-bar F, substantially as heretofore shewn and specified and for the purpose set forth. 2nd. In combination with the trip-lever D and frame A of a hay-fork, the set-screws I, I attached in suitable sockets in frame A, for regulating the angle of the trip-lever D, and points *c*, *d*, substantially as shown and specified.

No. 28,357. Milk Can Cover.

(*Couvercle de jatte à lait.*)

Albert Welch, Gorrie, Ont., 13th January, 1888; 5 years.

Claim.—1st. A milk-can cover having a hole through it, surrounded by an outwardly projecting wall, provided with a detachable strainer top cap, substantially as and for the purpose specified. 2nd. A milk-can cover having a hole through it, surrounded by an outwardly-projecting wall, provided with a detachable cap having an inwardly-projecting tube connected to it, substantially as and for the purpose specified. 3rd. A milk-can cover consisting of a convex top A attached to a rim B, and having a hole, substantially in its centre, surrounded by a wall C provided with a detachable cap having an inwardly-projecting tube F formed on it, substantially as and for the pupose specified.

No. 28,358. Invalid Bed. (*Lit d'hôpital.*)

William Parsons, (assignee of William Nutt,) Toronto, Ont., 14th January, 1888; 5 years.

Claim.—In an invalid bed, the combination, with the main frame A B, of the divided longitudinals C, C, having cross bars D, D, carrying a spring mattrass, pivoted bars G, G connecting said divided longitudinals, and toothed bars K, K adapted to engage with projections on the frame, substantially as and for the purpose described. 2nd. In an invalid bed, the combination, with the adjustable head H, and curved toothed bars K, K connected by tranverse rod L, of the cord O passing from said rod through eyes upon the head H, substantially as and for the purpose specified.

No. 28,359. Steam or Water Motor.

(*Moteur à vapeur ou à eau.*)

The J. T. Case Engine Company, New Britain, (assignee of Jool T. Case, Bristol,) Conn., U.S., 14th January, 1888; 5 years.

Claim.—1st. The case or frame A, made of a flat thin form suitable for a shaft hanger, and provided with a flange at its upper end for securing it in a pendant position, and also with the shaft bearing N having adjustable boxes, substantially as described and for the purpose specified. 2nd. In an engine, a hollow axle provided with a steam chamber and port, the oscillating piston mounted thereon, and also provided with a port for registering therewith, the box H fitted to said piston, and connected to a driving-crank, substantially as described and for the purpose specified. 3rd. The combination of the hollow axle provided with steam and exhaust chambers each having a steam port, the piston G mounted thereon and provided with a steam port, for registering alternately with the ports of the steam and exhaust chambers, and the reciprocating and oscillating box fitted to said piston and connected with a driving crank, substantially as described and for the purpose specified. 4th. The combination of a driving crank, the reciprocating and oscillating box, the piston fitted within said box, the case or frame covering the broad sides of said reciprocating and oscillating box and piston, and the hollow axle on which the piston is mounted, said axle and piston being provided with connecting ports, substantially as described and for the purpose specified. 5th. The combination of the hollow axle having steam and exhaust chambers, each provided with ports, the rocking or oscillating piston fitted to said axle and provided with a port at each end, and the reciprocating and oscillating box connected with a crank fitted to said piston, and adapted to be driven both ways by the steam passing alternately through the ports at the respective ends of the piston, substantially as described and for the purpose specified. 6th. The combination of an engine having a box like case or frame, with a lubricating device consisting of the pipes K, *t*, *u*, and chamber M, substantially as described and for the purpose specified. 7th. In an engine, the combination of the connecting rod *k* having shoulder *o* and stem *n*, the frame *q* containing the boxes for the crank, and having a threaded neck *r*, and the recessed nut for receiving the collar *o* screwed upon the threaded neck *r*, and pressing the stem of the connecting rod upon the half box of the crank, substantially as described and for the purpose specified. 8th. The combination of a driving crank, the reciprocating and oscillating box, the piston fitted within said box, and mounted on a shaft so as to have rocking motion thereon, and the case or frame covering the broad sides of said reciprocating and oscillating box and piston, substantially as described and for the purpose specified. 9th. The combination of a driving crank, the reciprocating and oscillating box, the piston or rocking block fitted within said box, the case or frame covering the broad sides of said reciprocating and oscillating box and piston, and the axle on which the piston is mounted, the chamber of said reciprocating and oscillating box being provided with inlet and outlet ports, which are opened and closed by the movement of said box, substantially as described and for the purpose specified.

No. 28,360. Drag Saw. (*Scie de travers.*)

Adam Reichert and Ellis L. Mundy, Tiffin, Ohio, U.S., 14th January, 1888; 6 years.

Claim.—1st. The combination, with the horizontal beam A and the upright beam to which it is secured, of the levers K, K pivoted to said beam A, the rack-bars P, P pivoted to said levers, the cog-pinions N, N secured to the common shaft M and intergearing with said rack-bars, the cog-wheel R mounted on said shaft M, and the rack-bars S with which said wheel R meshes, the said rack-bar carrying the saw to which it gives a reciprocating motion, substantially as specified. 2nd. The combination, with the rack bars P, P and S, and the cog-pinions N, N and wheel R, of the friction-wheel U mounted on suitable arms, and bearing upon the respective rack-bars to hold them in gearing with the cogged pinions and wheel, substantially as and for the purpose specified. 3rd. The combination, with the main frame D and beam A, of the sliding frame F, the cog-pinions N, N and wheel R mounted on a common shaft M journaled in the F, the rack-bars P, P and their operating-levers, and the rack-bar S carrying the reciprocating saw T, the whole arranged to operate substantially in the manner and for the purpose specified.

No. 28,361. Oiler and Wiper for Commutators. (*Graisseur et essuyeur pour commutateurs.*)

Jacob Snowberger, Akron, Ohio, U.S., 16th January, 1888; 5 years.

Claim.—1st. An oiler and wiper for commutators of dynamo-electric engines, consisting of a wood block saturated with lubricating substance, and arranged to rest on the periphery of said commutator, substantially as shown and for the purpose specified. 2nd. The combination, with a commutator of a dynamo-electric machine, of a wood block saturated with a lubricating substance, and a weight or equivalent device adapted to press said block against said commutator, substantially as shown and for the purpose specified. 3rd. The combination, with the commutator B, of the block F, weighted arm H and spring *i*, all constructed and arranged to operate substantially as set forth and for the purpose specified.

No. 28,362. Machine for Filing Saws.

(*Machine à limer les scies.*)

Edward J. Richmond, Chesapeake, Mo., U.S., 16th January, 1888; 5 years.

Claim.—1st. The combination, in a saw filing machine, of the table, the plate N pivoted thereon and adapted to turn to any desired angle, the reciprocating cross-head having the arms guided on the said plate, and the file holder and connections securing the same to the cross-head, substantially as described. 2nd. The combination, in a machine for filing saws, of the table, the plate N pivoted thereon, the reciprocating cross-head having the arms engaging the plate to guide the cross-head, the arm Y pivoted to the cross-head, the file holder adapted to be secured to the arm, and the spring K attached to the plate N and movable therewith, the said spring being adapted to support the arm Y, for the purpose set forth, substantially as described. 3rd. The combination in a machine for filing saws, of the table, the plate N pivoted thereon and adapted to turn to any desired angle, the said plate having the guides O, the reciprocating cross-head having the arms guided in the guides O, the arm Y pivoted to the cross head and adapted to secure the file holder, and the spring K secured to the free end of the plate N, and adapted to be turned therewith, the said spring being further adapted to support the arm Y, substantially as described. 4th. The combination, in a machine for filing saws, of the reciprocating cross-head, the arm Y secured thereto, and the file holder having the arm C² secured to the arm Y, the forward extending arm D², the socket E² and the movable block G² adapted to be adjusted on the arm D² and provided with the set screw H², said block having the opening to receive the front end of the file, substantially as described. 5th. The combination, in a machine for filing saws, of the table, the shaft G having the crank arm K, the box M secured to the crank arm by a wrist pin, the pitman pivoted to the said box, the plate N pivoted on the table and adapted to turn thereon for the purpose set forth, the cross-head having the arms bearing on the said plate and provided at its lower end with a pivoted block with which the outer end of the pitman is pivotally connected, and the arm Y attached to the cross head and adapted to secure the file holder, substantially as described.

No. 28,363. Art of Milling and Apparatus therefore. (*Procédé et appareil de meunerie.*)

Peter Powell, Dresden, Ont., 16th January, 1888; 5 years.

Claim.—1st. The improvement in the art of milling, which consists in, first, heating the wheat by contact with superheated steam, and then passing the wheat while warm between rolls or mill stones, as set forth. 2nd. The attachment, to an opening in the floor, of a spout feeding the rolls or millstones of flouring mills, of a steam box having a perforated flat top coinciding with the floor of the spout, said steam box having an inlet steam pipe for discharge of superheated steam into the box and spout, and a pipe to carry off water of condensation, as set forth. 3rd. A feed heater attachment to an opening in the floor, of spouts feeding the rolls or mill stones of flouring mills, consisting of a steam box having a perforated flat top and an internal disk, and inlet and outlet pipes and a jacket enclosing the unperforated portion of the box, as and for the purpose set forth.

No. 28,364. Screw-Driver. (*Tourne-vis*)

Noah Fellers, McComb, Ohio, U.S., 16th January, 1888; 5 years.

Claim.—1st. The combination of the shank-bit B, formed with a longitudinally arranged slot 18 and a guide pin 22, of the spring-jaws E projected from a head-ring 20 having turning-pin 23, and the clamping-sleeve F having spiral slots 25, the lower edges of which are formed with pin-seats 26, substantially as described. 2nd. The combination, with the bit-shank formed with a longitudinal slot 18, and the clamping-jaws 19 provided with a turning pin 23, projected through the longitudinal slot in the shank of a clamping sleeve F, formed with spiral grooves 26 to take the projecting ends of the turning-pin 23, substantially as and for the purpose specified.

No. 28,365. Heading for Window-Shades. (*Garniture pour rideaux de fenêtres.*)

James H. Sevenson, Chicago, Ill., U.S., 16th January, 1888, 5 years.

Claim.—1st. As a new article of manufacture, a heading for window-shades comprising two layers of fabric secured flatwise together toward their longitudinal edges, and having a longitudinal opening *q* and a flap *p* above the opening, substantially as and for the purpose set forth. 2nd As a new article of manufacture, a heading for window-shades comprising two layers of fabric *r* and *r*1 woven flatwise together toward their longitudinal edges, and having a longitudinal opening *q*, two flaps *p* above its opening, and fringe *o* at the edge below the opening, the layers flaps and fringe being integral, substantially as and for the purpose set forth.

No. 28,366. Dyeing Blue. (*Teinture Bleue.*)

Clemens Lohmann, Cologne-on-the-Rhine, Germany, 16th January, 1888; 15 years.

Claim—1st. The process of dyeing wool and other animal fibrous materials blue, by boiling them in a watery solution of azo-diphenyl-blue, extract of log-wood, blue vitriol, green vitriol, an alkalic bisulphate and oxalic acid in, the proportions substantially as herein before specified.

No. 28,367. Gang Die Press. (*Presse à étampes en groupe*)

Edwin Norton, Maywood, and Olivier W. Norton, Chicago, (assignees of John G Hodgson, Maywood,) Ill., U.S., 16th January, 1888; 5 years.

Claim.—1st. In a gang die-press having alternately arranged male and female dies, the combination, with a guide pin or gage for one edge of the sheet, of a pair of dies, as K, K1, for forming a corresponding registering notch or recess in the opposite edge of the sheet, for adjusting the sheet into position under the gang of dies for the second stroke, substantially as specified. 2nd. In a gang die-press having alternately arranged male and female dies, the combination, with a guide pin or gage for one edge of the sheet, of a pair of dies, as K, K1, for forming a corresponding registering notch or recess in the opposite edge of the sheet, for adjusting the sheet into position under the gang of dies for the second stroke, and gage or guide pins *k*1, *k*2 for the side edge of the sheet, substantially as specified. 3rd. The combination, with a gang die-press having alternately arranged male and female dies, of two guide pins or gages, one for registering the position of the sheet at the first stroke of the gang dies, and the other for registering the position of the sheet at the second stroke of the same, substantially as specified. 4th. In a gang die-press, the combination, with a gang of male dies, and a gang of female dies, of a sheet flattener or smoother plate reciprocating upon said male dies, and adapted to strike the sheet in advance of the dies, and thus smooth and flatten it out, said female dies having their cutting edges all in the same plane, and operating in conjunction with the said flattener plate, substantially as specified 5th In a gang die-press, the combination, with male dies B secured to a movable head B1, of female dies C secured to a bed plate C1, and a sheet smoother or flattener plate D, having holes *d* through which said dies B may project, said plate being mounted to reciprocate upon said dies, and adapted to strike the sheet in advance of the dies, said female dies having their cutting edges all in the same plane and operating in conjunction with the said flattener-plate, substantially as specified. 6th. In a gang die-press, the combination, with male dies B and female dies C, of stripper plate D reciprocating on said dies B, a stop-bar E secured to the frame of the machine, and a stop-pin E1 adapted to strike said stripper-plate as the cross-head is raised, substantially as specified. 7th. In a gang die press, the combination, with male dies B and female dies C, of stripper-plate D reciprocating on said dies B, a stop bar E secured to the frame of the machine, and a stop-pin E1 adapted to strike said stripper plate as the cross head is raised, stop-bars F connected to said stripper plate D, ejecting-pins *f*, and the movable stripper rings or portions of the dies against which said ejecting pins *f* strike, substantially as specified, 8th. The combination, with dies B and C, of head B1 having slot or recess F1, stop-bar F and ejecting pins *f*, *f*, plate D and connecting pins or links *f*2, substantially as specified. 9th. The combination, with dies B and C, of head B1 having stop or recess F1, stop-bar F and ejecting pins *f*, *f*, plate D, connecting pins or links *f*2, and stop bar E and pins E1, E2, substantially as specified. 10th. The combination, with a gang of dies B and a gang of dies C, bed-plate C1, head plate B1 having slots or recesses F1, extending over or across two of said dies B, ejecting pins *f*, *f* for each of said dies B, movable stop-bars F mounted in said slots or recesses *b*, and the movable stripper rings or portions of the dies against which said ejecting-pins *f* strike, substantially as specified. 11th. The combination, in a gang die-press, of a head-plate furnished with a match-plate having sockets for the main dies, with a bed-plate furnished with a match-plate having sockets for the female dies, the sockets in said match-plates being concentric with each other and extending entirely through the same, the ends of the dies fitting against said head-plate and bed-plate, substantially as specified. 12th. The combination, with a gang of alternately arranged male and female dies, of a supplemental or additional pair of male and female dies, arranged in the gang at one end thereof, said supplemental pair of dies making a cut at one stroke, but no cut at the other stroke of the press, substantially as specified.

No. 28,368. Rotary Engine. (*Machine rotatoire.*)

John Broughton, Toronto, Ont., 18th January, 1888; 5 years.

Claim.—1st. In a rotary engine, the construction of the cylinder chamber D of circular form, in combination with the hinge valves J, and piston or pistons K, substantially as and for the purpose specified. 2nd. In a rotary engine, the combination of the cut-off valves H, steam ports I, disk valve S and openings *f*, *f*, with the cylinder and pistons, substantially as and for the purpose specified. 3rd. The hinge valves J formed circular to correspond with the circular chamber D, and each hinged by a pin *a* to the flange B, and provided with a spring packing ring *b*, all arranged and constructed substantially as and for the purpose specified. 4th. An outer indicator attached to the pins *a*, of the hinge valves J to indicate the position of the said valves, substantially as and for the purpose specified. 5th. The combination of the interior chamber O and pistons K, piston chamber D, exhaust openings *d*, *d*1, *d*11, and cut-off exhaust flange N, N, substantially as an for the purpose specified. 6th. The combination of the steam chamber Q, valve S with openings *f*, *f*, steam ports I, steam chambers E, valves H, hinge valves J, piston or pistons K with the steam chamber D, and outward devices for regulating the same, substantially as and for the purpose specified. 7th Th. combination, with the valves, of the stationary lever U, loose lever U, weights T, T, arms *g*, connecting links V, compressing lever X, inclined plate *m*, friction roller *l*, and valves H, substantially as and for the purpose specified. 8th, The combination of the valve chambers E, piston chamber D and packing chamber V1, when constructed as shown, and co-operating with the piston or pistons and valves, substantially as and for the purpose specified.

No. 28,369. Valve, Valve-Seat, etc. (*Soupape, siège de soupape, etc.*)

Robert W Traylor, Richmond, Va., U.S, 1888, 5 years.

Claim.—1st. A facing or bearing surface for valves, valve seats and equivalent structures, the same consisting of a body of mica clamped tightly to form a solid mass, substantially as before set forth. 2nd. A valve, the bearing surface of which is composed of a body of mica, clamped tightly to form a solid unbending mass, substantially as described. 3rd. A valve-seat, the bearing surface of which is composed of mica, substantially as described. 4th. A valve, the movable contact surface or grinding-surface of which is composed of a body of mica, substantially as described.

No. 28,370. Picket Fence. (*Clôture de pieux*)

Edward F. Shellaberger, Beaver Falls, Penn., U. S., 18th January, 1888, 5 years.

Claim.—A Picket fence composed of pickets, each made of a single rod bent to form legs, provided at intervals with opposite inwardly-extended curves, some of which meet, and others of which stand separated, and of longitudinal cables confining the incurved portions of the pickets between their strands, some of which cables are applied at the separated curves, and have their strands twisted between the legs of each picket, as described and shown.

No. 28,371. Sleigh. (*Traineau.*)

Samuel R. Bailey. Amesbury, Mass., U. S., 18th January, 1888, 5 years.

Claim.—1st. In combination with the risers and riser-bar of a sleigh-top, coupling devices thereto respectively secured, and formed and adapted to interlock and secure the seat in position, and yet allow a limited pivotal action thereof, whereby the angle of the riser-bar *l* and the riser *b* may vary as force is thereto applied, substantially as specified. 2nd. In combination, with the risers and riser-bars of a sleigh-top, coupling devices thereto respectively applied, and formed and adapted to interlock and secure the seat in position and to be disengaged at will, substantially as specified. 3rd. The combination of plate *e*, formed and adapted to be secured to the riser of a sleigh-top, and formed with an opening to receive the interlocking device, of plate *l*, and said plate *l* formed and adapted to be secured to the riser-bar, and having a projection or hook formed and adapted to interlock in the riser-plate, substantially as specified. 4th. The combination of plate *e*, formed and adapted to be secured to riser *b*, and with a circular opening *n*, with an extension *p*, and the riser bar plate *l* formed with an extension *q* and stud *s* adapted to engage and interlock in said plate *e*, substantially as specified. 5th. In combination, with riser *b* and rail 2, plates 3 and 7 thereto respectively secured, and formed and adapted to interlock and secure the top from vertical or rearward displacement, substantially as specified. 6th. The plates 3 and 7, formed and adapted to be respectively secured to the rail and riser of a sleigh, and with shoulder 4, cavity 5

and lip 6 formed in plate 3, and a hook 9 formed on plate 7 to interlock therein, substantially as specified 7th. The combination, with the body-rail and top-riser of a sleigh, of metallic plates formed and adapted to be thereto respectively secured, and with interlocking parts formed and arranged to be secured to the top from vertical and rearward displacement when so interlocked, substantially as specified.

No. 28,372. Inhaler. (*Inhalateur.*)

Allen R. Foote, Cincinnati, Ohio, U. S., 18th January, 1888; 5 years.

Claim.—1st. The inhaler vessel, with the double orificed cork or stopper, combined with the set of tubes 1, 2, 3, 4, 5 and 6, all as and for the purpose described. 2nd. The inhaler vessel, combined with the perforated wooden cork, coated with acid-proof enamel, and carrying the sponge and tubes, all substantially as and for the purpose specified. 3rd. The double orificed enamelled acid-proof cork or stopper, combined with the inhaling vessel and tubes, substantially as and for the purpose specified.

No. 28,373. Furnace of Steam Boiler.

(*Foyer de chaudière à vapeur.*)

John T. Ellis and James H. Ellis, Toronto, Ont., 18th January, 1888; 5 years.

Claim.—1st. A hollow vessel located within a tank containing water and having an aperture in or near its bottom, provided with a suitable valve through which water may enter the vessel, but not escape, and a smaller aperture or hole through which the water may escape slowly from the vessel, in combination with a door arranged in connection with a doorway leading to the furnace, and so weighted and connected to the hollow vessel that it will be held open when the vessel has been sunk by the admission of water into its interior, and will close when the water has escaped from the said vessel, substantially as and for the purpose specified. 2nd. A hollow vessel located within a tank containing water, and having an aperture in or near its bottom provided with a suitable valve through which water may enter the vessel, but not escape, and a smaller aperture or hole through which the water may escape slowly from the vessel, in combination with a valve located in a steam pipe leading to the furnace, and so connected to the hollow vessel that it will be held open when the vessel has been sunk by the admission of water into its interior, and will close when the water has escaped from the said vessel, substantially as and for the purpose specified. 3rd A hollow vessel located within a tank containing water, and having an aperture in or near its bottom, provided with a suitable valve through which water may enter the vessel, but not escape, and a smaller aperture or hole through which the water may escape slowly from the vessel, in combination with a valve located in the steam pipe leading to the furnace, and with a door arranged in connection with a doorway leading to the furnace, the door and valve being so connected to the hollow vessel that it will be held open when the vessel has been sunk by the admission of water into its interior, and will close when the water has escaped from the said vessel, substantially as and for the purpose specified. 4th. A furnace-door A, having an aperture in it covered by a supplemental door B, and protected by a perforated plate C, in combination with mechanism by which the supplemental door B is held open for a limited period, immediately after the closing of the furnace door, substantially as and for the purpose specified. 5th. A steam-pipe G, having a branch *f* connected to the jets H, and an open-ended branch I, connected to the perforated pipe J, in combination with a valve by which steam is simultaneously admitted into the jets and perforated pipes, substantially as and for the purpose specified.

No. 28,374. Binder for Waggon or Sleigh Racks. (*Embrelage pour râteliers de voitures.*)

Andrew Hughson, East Garafraxa, Ont., 18th January, 1888; 5 years

Claim.—The combination of the roller J, the ratchet wheel D, the lever and hook C, the dog E, the spring F, the button G, the safety pins K, K, the stud pins N, N, N and the ropes M, M, M, substantially as and for the purpose hereinbefore set forth.

No. 28,375. Mining Machine. (*Machine de mine.*)

Parker Stores, Aspen, Col., U.S., 18th January, 1888, 5 years.

Claim.—1st. The combination of the doors C hinged at their outer sides and adapted to close together, the vertically movable cross-head, the links connecting the cross-head to the doors, and the lever to operate the cross-head and thereby open and close the doors, substantially as described 2nd. The combination of the frame D, the doors C hinged thereto at their outer sides, the vertically movable cross-head F, longitudinally adjustable links connecting the said cross-head to the door, and the lever to raise and lower the cross-head and thereby open and close the doors, substantially as described. 3rd. The combination of the frame D, the doors C hinged thereto at their outer sides and adapted to close together, the vertically movable cross head, the links connecting the same to the door, the bell-crank lever connected to the cross-head, and devices, substantially as set forth, to lock the lever when the doors are opened, substantially as described. 4th. In combination with the hinged doors C, the guide rods, the cross-head moving on the guide rods, and having depending tubes to slide over the rods, the links connecting the cross-head to the door and the operating lever, as set forth.

No. 28,376. Portable Cooking Apparatus.

(*Appareil de cuisine portatif.*)

Henry Tricker, London, Eng., 18th January, 1888; 5 years.

Claim.—1st. In an apparatus in which cooking by moist steam heat is effected the free end open shallow water vessel A for the reception and immersion of the lower part of the inner barrel or cylinder J, and stepped for the reception of the canopy or outer covering N, as described. 2nd. In an apparatus in which cooking by dry heat is effected, the holed bottom tray A^1 provided with a heat diffuser Q, for the distribution of dry heat within the inner barrel or cylinder J, as described 3rd In a portable cooking apparatus, the combination of the bottom tray A, or A_1, the inner barrel or cylinder J, the lid M, the outer covering or canopy N, all fitted and acting as and for the purpose or purposes set forth.

No. 28,377. Blotter Bath. (*Bain de buvard.*)

Charles M. Beardsley, Cleveland, Ohio, U.S., 18th January, 1887; 5 years.

Claim.—1st. In combination, a blotter bath having a reservoir for holding fluid, a blotter-holder removed from the fluid chamber, and capillary conducting material for conveying moisture from the reservoir to the holder, substantially as set forth. 2nd. In a blotter-bath, the combination of a fluid reservoir and a blotter-holder, with a capillary conductor, and means, substantially as described, to regulate the flow of the fluid through the conductor. 3rd. The combination of a water reservoir and a blotter-holder, with a capillary conductor between said parts having a sheath in which the wick is enclosed substantially as set forth.

No. 28,378. Mould for Casting Wheels.

(*Moule pour couler les roues.*)

James W. McGill, Peoria, Ill., U.S., 18th January, 1888; 5 years.

Claim.—1st. In a metallic mould, the combination of the casing of two parts uniting by rabbet-joint, and provided with a bead at each end of the inner face, the bed-plate with side projections, linked sections, double wedges and brace rings, as set forth. 2nd. The combination of the bed-plate, casing C, C, brace-rings, double wedges, linked sections, and clamping rods J, as shown and described. 3rd. The combination of a bed plate, provided with a central depression, casing C, C, brace-rings, linked sections, double wedges and clamping rods, for the purpose set forth. 4th. The combination, with a bed-plate casing, linked sections and double wedges, of brace-rings, consisting of a plate formed with a central aperture, a scalloped periphery and having upon one face a pair of pyramidal projections at each scallop-point, as shown and described. 5th. The combination, with a bed-plate, casing, linked sections, double wedges, and brace rings, of a rough-edged wedge and a clamping-rod formed with a handle at one end, a projection at the other, and an intermediate lipped projection, as shown and described. 6th. In a metallic mould, the combination, with a casing, a chain and linked sections of a wedge, and a tightening rod formed with a handle at one end, and a double wedged web extending down the middle of one side, as shown and described. 7th. In the within described metallic mould, the combination, with a casing, double wedges and brace-rings, of a linked section consisting of wedge-links, formed with a Y-shaped lug upon their inner faces, one prong of which is reduced and provided with an oblong perforation, the other prong centrally recessed, and links being united by a pin passed through the centrally recessed prong, and the perforation in the reduced prong of an adjacent link, as shown and described. 8th. In a metallic mould, the combination of a bed-plate, a casing, linked sections consisting of wedge-links, each provided with an eye upon its inner face, a chain passing through said eyes, double wedges, brace-rings, clamping-rods and chain-tightening rods, as set forth. 9th. The combination of a bed-plate provided with a central pedestal, having a notched rim about it near its upper end, a casing, linked sections detachably united by steady-pins, and provided on their uniting ends with semi-cylindrical grooves terminating at their outer ends in countersinks, double wedges, brace-rings and clamping-rods, as shown and described. 10th. The combination, with the within-described metallic rim-mould, in which the bead on the upper end of the inner face of the casing is recessed at intervals, of an oblong funnel-shaped gate, provided with a lateral recessed projection at its base, and a key attached thereto for securing the same upon a perforated stud projecting from the upper end of a wedge-link, as shown and described. 11th The combination, with a hub-mould, of the within-described metallic rim-mould, consisting of bed-plate, casing, pedestal, linked sections, double wedges, brace rings, clamping-rods, chains and chain-tightening rods, as described and shown. 12th. In a metallic hub-mould, the combination, of a three-armed bed plate, provided with a screw, and hand-wheel supported by a projection upon the end of each arm, a replaceable trestle at the centre of said plate, and a hub-mould proper resting upon said trestle, as set forth. 13th. The combination, with a metallic hub mould having a tenon on its bottom, of a trestle formed with a reduced lower end, and with a socket in its upper end, adapted to receive the lower end of said trestle, as set forth. 14th The within described hub-mould, consisting of parts formed and united at their meeting edges, substantially as specified, and the upper portion provided with a perforation, one side of which is removed for a distance from the top of the mould, and a dovetailed piece corresponding in size to the removed portion, fitted removably in the place thereof, substantially as and for the purpose set forth 15th The within described gate for metallic moulds, consisting in the combination of a removable dovetailed piece, shaped to form a portion of one side of the inlet, a hook and a wedge for retaining said piece in place, as shown and described. 16th. The combination of a rim-mould, with the within described hub-mould, consisting of a three-armed bed plate, screws and hand-wheels, trestle hubmould proper and its gate with detachable side hook and wedge, as and for the purpose set forth.

No. 28,379. Saw Swage. (*Etampe à scie.*)

Samuel Hill, Ottawa, Ont., 18th January, 1888, 5 years.

Claim.—A saw swage consisting of the body A, provided with a slit B to receive the saw, and having at one end a punch D, and anvil D at the end of the slit, and the other end of the body provided with holes G and thumb-screw K, and a grooved bar E to bear on the top of the saw teeth, as set forth.

No. 28,380. Manufacture of Candies, Toy Confections, etc. (*Fabrication des candis, bonbons-jouets, etc*)

Walter E. Coleman, Brooklyn, N. Y., U. S., 19th January, 1888; 15 years.

Claim.—1st. The process, herein described, of manufacturing castings of candy or confectionary from a fluid or semi fluid material, consisting in depositing such material in matrices formed in a mould of elastic or semi-elastic material, allowing the castings to set or harden, and then loosening or discharging them therefrom by bending the mould, substantially in the manner and for the purpose described. 2nd. The process, herein described, of manufacturing castings of candy or confectionary from a fluid or semi-fluid material, consisting in depositing the prepared material in a suitable hopper, from the lower end of which it is discharged into matrices formed in a mould or sheet of elastic or semi-elastic material, removing all surplus material from the faces of the mould, substantially as described, allowing the resulting castings to set or harden, and then loosening or discharging them from their matrices by bending the mould, substantially in the manner and for the purpose described. 3rd. The process herein described, of manufacturing castings of candy or confectionary from a liquid or semi-liquid material, consisting in depositing the said material in a suitable hopper, from the lower end of which it is removed by an endless belt of elastic or semi-elastic material, formed with a series of matrices in which the castings are allowed to set or harden, and from which they are discharged by the stretching of the said elastic mould as it passes over a curved surface, substantially in the manner and for the purpose described.

No. 28,381. Shackle. (*Menotte.*)

Frank McDonald, Boise, I.T., U.S., 19th January, 1888; 5 years.

Claim.—1st. In a shackle, the combination, with a lock case of shackle arms, sliding upon each other and upon the lock case, and bolts or catches for locking the same, substantially as described. 2nd. The combination, with a lock case having grooved upper and lower surfaces, and provided with bolts, of the shackle arms C, C, adapted to slide in the grooves on the lock case, and having the straight serrated portions *n n* to engage with the bolts, as set forth. 3rd. The shackle arms or bows C, C, each of which is provided with a central curved portion, and two straight arms, one of said arms being notched or serrated, and the other grooved, in combination with a lock case upon which the shackle arms are adapted to slide, and bolts for fastening the same, substantially as herein set forth. 4th. In a shackle, the combination, with a lock case provided with spring bolts, of the shackle arms C, C, having the curved portions O, O, the straight arms *n*, *n*, provided with serrations or notches for engagement with the spring bolts, the grooved arms *m*, *m*, in which the serrated arms move, and the openings *q*, *q*, at the ends of the grooves for the passage of the serrated arms, substantially as specified. 5th. In a shackle, the combination, with a lock case provided with spring bolts, and having a concave surface on its sides, and a groove on its upper and lower surfaces, of the shackles having the serrated or notched arms, the grooved arms in which the serrated arms move, and the curved portion uniting the two arms, the said shackles being adapted to engage with, and slide in the grooves or the upper and lower surface of the lock case, substantially as described.

No. 28,382 Anti-Friction Journal Box.

(*Coussinet de tourillon à anti-friction.*)

William S. Sharpneck, Denver, Col., U. S., 19th January, 1888; 5 years.

Claim.—1st. The combination, in a journal box, of a series of hollow rollers B, the separating washers D, the pins E passing through the rollers B into the washers D, and a series of smaller rollers H between the rollers B and the pins on which they revolve, substantially as described. 2nd. The combination, in a journal box, of a journal A, having a rim *a*, *a*, series of hollow rollers B having grooves to fit the rim, separating washers D at each end, a series of pins E passing through said rollers B, and having their end secured in the washers, and a series of small rollers enclosed in each large roller, substantially as described. 3rd. The combination, in a journal box, of the box I, cap I1 with the ball L, disk K, having groove *k*, and an adjusting device, as the stud M and nut N, substantially as described. 4th. The combination, with a journal, of the casting I, cap I1, disk K, ball L, roller O, bearing C, hollow rollers B, pins E, washer D and small rollers H, intermediate of the pins E and hollow rollers B, substantially as described.

No. 28,383. Insect Trap. (*Piège à insectes.*)

John Williams, Port Colborne, Ont., 19th January, 1888; 5 years.

Claim.—The combination of a light suspended on, or near, a level with the top of a vessel A, contracted at the top and containing a liquid B, substantially as set forth.

No. 28,384. Picture Hanger. (*Accroche-image.*)

Warren M. Brinkerhoff, Auburn, N.Y., U. S., 19th January, 1888; 5 years.

Claim.—1st. A picture hanger consisting of two vertically disposed arms, each provided with means for engaging a support for the same, the said arms supporting the entire weight of the hanger, a connection between the said arms, and two independent cord-supporting projections below the supporting means, held from contact with each other by the connection between the arms, substantially as described 2nd. A picture hanger consisting of two arms, each provided with means for engaging a support for the same, a connection between the said arms, holding the same apart, but permitting the independent adjustment of said parts, and a cord support attached to said hanger, substantially as described 3rd. A picture hanger consisting of two arms, each provided with means for engaging a support for the same, and a bar of flexible material connecting said parts, and provided with elevations and depressions to increase the rigidity of the bar, and a cord support attached to said hanger, substantially as described 4th. A picture hanger, consisting of two arms, each provided with means for engaging a support for the same, and a bar connecting the said arms, and an adjustable connection between said arms holding them from contact with each other, and a cord support, substantially as described. 5th A picture hanger, consisting of two vertically disposed arms, each provided with means for engaging a support for the same, a bar connecting said arms and holding them out of contact with each other, and two cord supports for two separate cords, substantially as described. 6th. A picture-hanger, consisting of two vertically disposed arms, each provided with means for engaging a support for the same, a connection between the said arms holding them out of contact with each other, a cord support and locking or retaining projections below the cord support for holding the cord in an inwardly-deflected position, substantially as described. 7th. A picture hanger, consisting of two vertically disposed arms, each provided with means for engaging a support for the same, a bar connecting said arms, a cord support and a plate attached to said bar, and provided with an additional cord support, substantially as described. 8th. A picture hanger, consisting of two vertically disposed arms, each provided with means for engaging a support for the same, a connection between said arms, two cord supports connected with the hanger, and a locking projection or projections below the cord supports within vertical lines from the outer edges of such supports, substantially as described.

No. 28,385. Ladder. (*Echelle.*)

William Cummer and Hubert Cummer, Cadillac, Mich., U. S., 19th January, 1888; 5 years.

Claim.—1st A ladder in which the side rails are made in three sections, one or more sections being bent either inwardly or outwardly, so as to form a laterally braced side rail. 2nd. The combination, in the side rails of a ladder, of three sections, with the central section of the three springing outward, as represented by A, A, and B in the accompanying drawings, for the purpose and in the manner substantially as above specified. 3rd. The combination, in a ladder, of side rails formed of three sections, with mortises in the central section of the three, adapted to receive the ends of the rungs as illustrated in the accompanying drawings, for the purpose and in the manner substantially as above specified. 4th. The combination, in a ladder, having the side rails formed of three sections, with the central one of the three springing outward laterally, and provided with mortises for the rungs of such rails, and rungs varying in length to fit the varying distances between the central sections of said rails, as illustrated in the accompanying drawings, substantially for the purpose and in the manner above specified. 5th. The combination, in a ladder, of side rails formed of three sections, with the central section springing outward and provided with mortises to receive the ends of the rungs, and of rungs of varying length passing between the side sections of said rails, and fastened by any suitable device thereto, and entering the mortise in said central section of the rails, as illustrated in the accompanying drawings, substantially for the purpose and in the manner above set forth.

No. 28,386. Paint or Coating.

(*Peinture ou enduit*)

Patrick Molyneux, London, Eng., 19th January, 1888; 5 years.

Claim.—1st. The above described lining or coating for tanks or vessels, composed essentially of black oxide of iron (ground fine) Portland cement, litharge, methylated spirits of wine, shellac, glycerine, gum arabic and powdered glass, substantially in the proportions specified and for the purposes set forth. 2nd, The application of the hereinafter specified lining or coating for tanks or vessels, used for the transport or storage of petroleum, turpentine and the like, composed of black oxide of iron, Portland cement, litharge, methylated spirits of wine, shellac, glycerine, gum arabic and powdered glass, substantially in the proportions and for the purposes set forth.

No. 28,387. Car-Coupling. (*Attelage de chars.*)

John S. Andrews, Milltown, N.B., 19th January, 1888. 5 years.

Claim.—1st. The car-coupler, substantially as described, consisting of the body A, the single curved horn B, the abutment C, the intermediate projection D, the recess or chamber *i* between such projection and horn, and the spring latch E in such projection, all being arranged essentially in manner and to operate as set forth. 2nd The combination, with the body A, of the draw-bar G, spiral spring K and sleeve I, whereby the coupling will be flexible on the draw-bar, and be returned to a normal position by expansion of the spring, as set forth for the purpose described.

No. 28,388. Apparatus for Making Sand-Cores. (*Appareil pour faire les noyaux en sable maigre.*)

John Foran, Portchester, N.Y., U.S., 19th January 1888. 5 years.

Claim.—1st. In an apparatus for forming sand-cores, the core-arbor supports therefor, a knife co-operating therewith, and a knife rest inclined toward the sand-pit, combined with a distributor and chute, the said sand-pit, an elevator extending from the sand-pit upward into proximity to the distributor to discharge its load thereunto, and an incline extending from the knife-rest to the sand-pit for returning the surplus sand from the core-arbor to the sand pit, substantially as described. 2nd. In an apparatus for forming sand-cores, the combination, with the receiver and chute, of interposed anti caking bars *a*, and toothed bars *b*, and means for imparting an endwise movement to these toothed bars, substantially as described. 3rd. A distributing device comprising a series of toothed rack-bars loosely supported in guides

at each end, and means for imparting an endwise movement to these rack-bars in alternate pairs, substantially as described. 4th. A distributing device comprising a series of toothed rack-bars loosely supported in guides at each end, in combination with bar-holders *d*, *d*, arms *e*, *e*, and cams *f*, *f*, fixed upon a shaft D, whereby, when motion is imparted to said shaft, the rack-bars are moved horizontally, substantially as described. 5th. The combination, with the receiver B, rack-bars *b* and *h*, their connections, of the chute C having converging sides, substantially as described. 6th The sand-chute C having converging sides, as set forth, and provided with adjustable slides at each end of the discharge opening, whereby said opening can be contracted or expanded, substantially as described for the purpose specified. 7th. The combination, with the frame I and core-arbor, of the bearings J adjustably secured in the frame and adapted to be moved so as to increase or diminish the distance between the core-arbor and a cutting knife, substantially as described for the purpose set forth. 8th The combination, with the frame I, core-arbor K and bearings J, of the set screws *h*, *h*, elongated slots and set screws *v*, whereby the core-arbor can be adjusted with relation to the cutting-knife, substantially as described. 9th. The combination, with the frame I supporting the adjustable bearings J for the core-arbor K, of the cutting-knife L, substantially as described. 10th. The combination, with the knife L and knife-rest M, of the sand pit N, provided with the incline O, whereby the surplus sand removed by the cutting-knife is caused to fall back into the sand-pit, substantially as described. 11th. In an apparatus for forming sand-cores, the combination of the sand-pit N having the incline O, elevator buckets U and hoisting mechanism receiver B, distributing device and chute C with the core-arbor K, knife L, and knife-rest M, constructed and operated substantially as described for the purposes set forth.

No. 28,389. Car-Coupler. (*Attelage de chars.*)

John Z. Palm, Bowmansville, Penn, U. S., 19th Jan., 1888; 5 years.

Claim.—1st. In a car-coupler, the combination, with a car, of a bracket *b* secured thereto, a draw bar A slotted at its inner end, and provided with a plate *d*, a rod or stem *c* projecting through the end plate *d* inward between the arms of the draw bar *a*, plate *f*, secured to the outer end of the rod *c* a spring *g* encircling the rod or stem, and a pin or bolt *e*, connecting the rod or stem with the plate or bracket *b* 2nd. In combination with a car and a bracket *b* secured thereto, a draw bar A slotted at its inner end, and pivotally connected with the bracket, a rod or stem projecting through the slotted end of the draw bar, and carried at its ends in brackets *i*, and springs *j* encircling the stem *h*, and bearing at opposite ends upon the draw bar or brackets *i* 3rd. In a car-coupler, the combination, with a draw bar, of a latterally swinging hook pivotally attached thereto, a latch for locking the said hook against lateral movement, a shaft projecting outwardly beyond the side of the car, and mechanism, substantially as shown, connected with the shaft and serving to operate the latch and the hook, as described 4th. In a car-coupler, the combination, with the draw bar, of a laterally swinging hook pivotally attached thereto, a latch for locking the said hook against lateral movement, a vertical shaft projecting upward above the floor of the car, and mechanism, substantially such as shown, connected with the shaft and serving to operate the latch and the hook, all as described. 5th. In a car-coupler, the combination, with a draw bar, of a laterally swinging hook pivoted thereto, a locking device for retaining said hook in position, a vertical shaft journaled in the draw bar, a second shaft also journaled in the draw bar and projecting laterally therefrom, and mechanism for operating the hook and the latch and connected with both of the shafts, substantially as shown. 6th. In combination with a draw bar and a hook pivoted thereto, a plate C or equivalent device connected with the hook, a latch D adapted to engage the plate C, a plate H journaled in the draw bar and connected with the plate C and with the latch D, and means for operating the plate H, all substantially as shown. 7th. In combination, with draw bar A, pivoted hook B, plate C and latch D, all arranged substantially as shown, a plate H, provided with arms I and K connected respectively with the plate C and latch D, and means for swinging said plate H upon its pivot. 8th. In combination, with draw bar A, hook B, plate C and latch D, arranged substantially as shown, plate H mounted upon the draw bar, and provided with a curved slot L, adapted to receive a pin M upon the plate C, and a bar N connecting the plate H with the latch D. 9th. In combination, with draw bar A, hook B, plate C and latch D a plate H mounted upon the draw bar, and provided with a slotted arm I, a pin M secured to plate C and working in the slotted arm, and a bar N pivotally connected at one end to the plate H, and connected at its opposite end by means of a sliding joint with the latch D. 10th. In combination with draw bar A, hook B, plate C and latch D, arranged substantially as shown, a plate H mounted upon the draw bar A, and provided with arms I, J and K, a pin L secured to plate C and working in a slot in arm I, a rod or bar N connecting arm K with latch D, a shaft F secured to, and forming the pivot of plate B, a shaft R arranged at right angles to shaft F, and provided with a radial arm Q, and a link P connecting the arms J and Q, all substantially as shown. 11th. In combination with draw bar A, hook B, plate C and latch D, a shoulder *q* upon that face of hook B opposite to plate C, a slotted plate H provided with the draw bar a pin M projecting from plate C into a slot in the plate H, a rod H pivotally connected to latch D and means for swinging the plate H upon its pivot, as described 12th. In combination with a car, a draw bar secured thereto, a laterally swinging hook secured to said draw bar, a plate connected with the hook, and a shaft or its equivalent journaled in the draw bar, and connected with the plate, as described and shown. 13th. In combination with a car, a draw bar, a hook, a plate, a shaft journaled in the draw bar and connected with the plate, and a locking device for said plate all substantially as shown and described. 14th. In combination with draw bar A, hook B, pivoted to the draw bar and provided with plate, as C, a cranked shaft F connected with plate C, a locking device for said plate, and means for operating the shaft and releasing the locking device from the platform and also from the side of the car, as described and shown.

No. 28,390. Grate for Ranges and Stoves.

(*Grille pour landiers et poêles.*)

William Buck, Brantford, Ont., 19th January, 1888; 5 years.

Claim.—1st. In a range or stove grate, the combination of concave grate A resting on snugs C, with pawls F and H, and spiral spring I, substantially as and for the purposes hereinbefore set forth 2nd. In a range or stove grate, the combination of roller D with grates 1, 2 and 3 formed on, or attached to it, with cam wheels E and G, and pawls F and H, substantially as and for the purposes hereinbefore set forth.

No. 28,391. Gas Generator. (*Générateur à gaz.*)

Catherine McIlraine (assignee of Samuel McIlraine,) Oakwood, Ont., 20th January, 1888, 5 years.

Claim.—1st. A gas generator consisting of a retort, A, A1, having an upturned bottom *a*, boiler B, a steam-pipe C, connecting said boiler and passing down the retort, an inverted funnel C1 secured to said steam-pipe and over said upturned bottom *a*, said steam-pipe provided with a valve and said retort with discharge pipe and removable cover, substantially as set forth. 2nd. In a gas generator, the combination of the retort A having an upturned bottom *a*, and a neck A1 provided with cover and discharge pipe E, an annular boiler B, a steam-pipe C, provided with valve C11 and passing into and down the neck of the retort, an inverted funnel C1 secured to the lower end of said pipe C and corresponding to said conical bottom *a*, and permitting steam or vapor to pass over the same and out into the retort, substantially as set forth. 3rd, In a gas generator, the combination of the retort A having an upturned bottom *a*, and a neck A1 provided with removable cover A11 and discharge pipe E, an annular boiler B surrounding said retort neck, a connecting pipe C having valve C11 and passing into and down the retort neck, an inverted funnel C1 secured to said steam-pipe, and an oil supply pipe D provided with valve, substantially as set forth. 4th. In a retort for gas generators, the combination of the lower part A, the upturned conical bottom *a*, the tubular neck A1, the inverted funnel C1 and the pipe C, substantially as set forth 5th. The process of generating gas by passing steam and oil through a heated mixture of charcoal and scrap iron, substantially as described.

No. 28,392. Anti-Rattling Attachment for Thill Couplings.

(*Appareil compensateur pour armons de limonières.*)

Peter E. Shick, Blue Ball, and William H. Lawson, Honey Brook, Penn., U.S., 20th January, 1888; 5 years.

Claim.—1st. The anti-rattling attachment for a thill coupling, consisting of the recessed elastic block, the plate adapted to engage over and behind the same, and provided with an extended end, the washer encircling said end and bearing against the cushion, and the eccentric lever applied to said end outside of the washer, as shown and described. 2nd. In an anti-rattling attachment for thill couplings, the combination, with a rubber block recessed to receive the thill iron, of a compression device consisting of two plates embracing said block, and an eccentric, whereby the plates are approximated to effect the compression of the block, as described. 3rd In combination, with a thill iron and clip of ordinary form, as represented, the anti-rattling attachment consisting of the recessed rubber block seated over and around the thill iron, the metal plate bearing between the face of the clip and the rear face of the block, and engaging over the latter, the underlying washer and the eccentric lever, as shown and described.

No. 28,393. Platform Rocker Spring.

(*Ressort de bascule sur plateforme.*)

Frederick Latulip, Syracuse, and Thomas W. Meachem, Onondaga Valley, N.Y., U.S., 20th January, 1888; 5 years.

Claim.—1st. As an improved article of manufacture, a metallic spring formed of a continuous spring metal bar, curved reverse at opposite ends in a uniform plane, and into loops terminating at opposite sides of the bar substantially as set forth. 2nd. A metallic spring composed of a continuous spring metal bar, having its main portion curved in the shape of an S, and its end portions terminating in proximity to the central portion of the bar at opposite sides thereof, and diametrically opposite to each other, substantially as set forth. 3rd A metallic spring composed of a continuous spring metal bar, having its main portion curved in a uniform plane into the shape of an S, and its end portions terminating with attaching eyes in proximity to the central portion of the bar at opposite sides thereof, substantially as described and shown 4th. In combination with the stationary base and rocker mounted thereon, a spring metal bar having its main portion curved in a vertical plane into the shape of an S, and its end portions attached respectively to the aforesaid base and rocker, as specified. 5th. In combination with the stationary base and rocker mounted thereon, a spring metal bar having its main portion curved in a vertical plane into the shape of an S, and its end portions terminating with attaching eyes in proximity to opposite sides of the central portion of the bar, and connected by said eyes respectively to the aforesaid base and rocker, substantially as described and shown.

No. 28,394. Military Accoutrement Hanger.

(*Porte-manteau de camp.*)

Charles F. Burnham, Toronto, and William A. Morton, Belleville, Ont., 20th January, 1888; 5 years.

Claim.—1st. The rim A, with the slots therein, for holding the hooks, substantially as and for the purpose hereinbefore set forth. 2nd. The L-shaped connectors, in combination with their receivers E, E, substantially as and for the purpose hereinbefore set forth. 3rd. The lugs in the said rim D, D, in combination with the slots in the pole F, F, substantially as and for the purpose hereinbefore set forth.

No. 28,395. Rake. (*Râteau.*)

John Potter and William Stratton, Toronto, Ont., 20th January, 1888; 5 years.

Claim—In a garden rake, the combination, with the handle A and head B attached together, so as to be at an angle to each other, of the finger bar C having teeth *c*, *c*, said bar and teeth being fixed to the lower edge of the head, so as to be approximately at right angles thereto and parallel with the ground, for the purpose specified.

No. 28,396. Evaporator. (*Appareil évaporatoire*)

William A. Herring, South Allen, Mich., U.S., 20th January, 1888; 5 years

Claim—1st. The combination, in an evaporator, of the series of continuous channels on the same horizontal plane, the series of parallel steam pipes extending through the said channels at the bottom of the same, and having a steam feed feed pipe at the beginning of the series of channels, and an exhaust pipe at the terminus of the channels, and a juice feed device arranged at the exhaust end of the series of steam pipes, and entering the bottom of the channel, substantially as and for the purpose set forth. 2nd. The combination of the body having the series of continuous channels, the series of parallel steam pipes extending through at the bottom of the channels and having the feed pipe and exhaust pipe, the skim compartment at the exhaust end of the series of steam pipes, the partition at this skim compartment over which the skimmings are adapted to be fed as desired, the juice feed device entering said compartment, and the top chamber extending over the channels to conduct the hot air therefrom, and having the hinged door covering the skim compartment, substantially as and for the purpose set forth. 3rd. The combination of the body of the evaporator, divided into channels or compartments, and having the loop or staple at its side, the top compartment arranged over these channels, and having the open end, and the upright conduct tube having the opening in its side, and the flange by which it is paced and secured in the said staple, substantially as and for the purpose specified. 4th. The combination, in an evaporator, of the series of continuous channels on the same horizontal plane, the series of steam pipes extending through said channels at the bottom of the same, and having a steam feed-pipe at the beginning of the series of channels, and an exhaust pipe at the terminus of the channels, a funnel arranged to one side of the exhaust end of the series of steam pipes and entering the bottom of the channel, and a feed pipe communicating with said funnel, substantially as specified. 5th The combination, in an evaporator, of the series of continuous channels on the same horizontal plane, the series of steam pipes extending through said channels at the bottom of the same, and having a steam feed pipe at the beginning of the series of channels, and an exhaust pipe at the terminus of the channels, the said exhaust pipe being extended in a single coil at the bottom of the channel, and a juice feed device arranged at the exhaust end of the series of steam pipes, and entering the body of the channel, substantially as specified.

No. 28,397. Hot Water Boiler.

(*Calorifère à eau*)

Thomas Fraser and John Fraser, New Glasgow, N.S., 20th January, 1887; 5 years.

Claim.—1st. The combustion chamber composed of two or more annular boiler sections, having direct water connections vertically and the lowermost section having the interior wall bevelling inwardly, as and for the purpose set forth. 2nd. A hot water boiler composed of annular boiler sections forming the combustion chamber, and having direct water connections, and flat boiler sections above the combustion chamber, having direct water connections one with another and with the sections below, and indirect smoke flues alternating and provided with apertures *v* and door *r* closing said apertures, as set forth.

No. 28,398. Whip. (*Fouet.*)

George Pirnie, New York, N. Y., U. S., 20th January, 1888; 5 years.

Claim.—1st. A whip, one of whose wrappings or coverings is composed of eelskin, substantially as and for the purposes set forth 2nd. A whip consisting of the core or central piece A, the wrapping or middle lining B wholly or partly composed of eelskin, and the outer covering C, substantially as shown and described. 3rd. A whip consisting of a hard core of rattan or other suitable material, enclosed in a wrapping or middle lining, wholly or partly composed of untanned eelskin, and with an outer covering, the eelskin being held in place merely by its own shrinkage, substantially as shown and described.

No. 28,399. Rein-Holder. (*Accroche-guides*)

Charles W. Pearsall, Syracuse, N. Y., U. S., 20th January, 1888; 5 years.

Claim.—In an adjustable rein-holder or clasp, a frame A consisting of the side end and cross-bars *a*, *b*, *c*, *d*, and having studs 3 and 4 formed on the outer ends of the bars *c*, *d*, in combination with the pivoted side bar B, secured to the bar *b* by a rivet or pin *e*, and having suitable openings 1, 2 upon its inner face, all constructed and operating together substantially as described and shown, and for the purpose specified.

No. 28,400. Automatic Pipe Coupling for Heating Railway Cars. (*Manchon de tuyau de chauffage pour chars de chemins de fer*)

William F. Grassler and William G. Elliot, Williamsport, Penn., U S., 20th January, 1888, 5 years.

Claim—1st. The combination, with the chest A, the tube B secured thereto at its rear end, and the head D secured to the forward end of the chest, and provided with an aperture, of the perforated sliding tube H open at its rear end, and provided at its forward end with a perforated head J, which is adapted to close the opening in the head of the chest, the spiral spring O surrounding the said sliding tube and serving to press it forward, and the perforated valved entering-tube, all arranged as and for the purpose set forth 2nd. The combination of the chest A, provided with the tube B at its rear end, and the apertured head D at its forward end, the perforated sliding tube H open at its rear end, and provided at its forward end with a perforated head J, which is adapted to close the opening in the head of the chest, and the spinal spring to press the tube H normally forward, substantially as described.

No. 28,401. Rotary Steam Engine.

(*Machine à vapeur rotative.*)

Franklin Fitch, Franklinville, (Co-inventor with Justin Hills, Ischua), N Y., U.S., 20th January, 1888, 5 years.

Claim.—1st. In a rotary steam-engine, the combination of a cylindrical piston having curved wings hinged with their inner edges to the surface of the same, and having bevelled ports in the ends to the rear of the hinged edges of the wings, with a cylinder having circular packing-plates at its heads, and having the piston journalled eccentrically in it, and having an annular groove or channel in each packing plate concentric with the piston and registering with the outer ends of the bevelled ports, and segmental cut-off rings or bars sliding adjustably in the grooves or channels, as and for the purpose shown and set forth 2nd. In a rotary steam-engine, the combination of a cylinder having eccentric registering bearings in its heads, and having the live steam ports in the heads to one side of the bearings, and having the exhaust port in the opposite side of the cylinder, a cylindrical piston journalled with its shaft in the bearings, and having curved wings hinged with their inner edges in shallow recesses in the surface of the piston, and provided with springs for forcing them outward, and having inclined or bevelled ports passing from the ends of the piston to the back of the wings, and packing-plates secured between the heads of the cylinder and the ends of the piston, and having annular grooves or channels in their inner sides registering with the bevelled ports, and provided with adjustable segmental cut-off rings or bars sliding adjustably in the channels, as and for the purpose shown and set forth. 3rd. In a rotary steam-engine having the live steam ports at one side, and the exhaust at the other side, and having eccentric bearings in the heads of the cylinder, the combination of a cylindrical piston having its shaft eccentrically journalled in bearings in the heads of the cylinder, and having shallow recesses at opposite sides of the piston, curved wings hinged with their inner edges in the recesses, headed rods sliding in radiating bores in the piston, and having springs for forcing them against the inner sides of the wings, and guide-plates hinged to the inner sides of the wings near the outer edges of the same, and sliding in correspondingly shaped grooves or recesses in the piston, as and for the purpose shown and set forth.

No. 28,402. Combination Check Protector.

(*Protecteur de chèque à combinaison.*)

David M. Gregory, Syracuse, N Y, U.S., 21st January, 1888; 5 years.

Claim—1st. An organized machine for marking cheques according to a code or key, from which the marking of the cheque by said machine can alone be accurately determined, the same consisting of a frame, a series of marking tools arranged upon a numerically equal series of plates movable within said frame, to bring the tools into position to indicate a given amount according to the key, a series of locking devices corresponding in number with the number of indicating or marking tools, a plunger for actuating said tools, and a set of registering tools, substantially as described. 2nd. In an apparatus for providing a cheque or other monetary instrument with symbols, characters, or indications, one or more movable plates having finger-pieces and spring-tongues, and indicating tools carried by the said plates, and an index plate for definitely positioning the said indicating tools, combined with bars *d*, having notches, one for each figure or character of the index plates, substantially as described.

No. 28,403. Pressure Percolator.

(*Filtre à pression.*)

Edwin S. Anderson, Detroit, Mich. U. S., 21st January, 1888; 5 years.

Claim.—1st. The combination, with the liquid-reservoir above and connected with the percolating-reservoir by tube, substantially as described, of the piston constructed with two plates forming an annular groove in the periphery, for embracing and clamping a rubber packing between the plates in the groove, with means for tightening or loosening the plates, whereby the packing may be extended or contracted for adjusting and tightening the piston in the percolating reservoir, substantially as shown. 2nd. The combination of the cylindrical percolating-reservoir having one end open and the opposite end partially closed, and provided with an outlet, the piston adjustable within the reservoir provided with means for packing and tightening the piston 3rd. The combination of the cylindrical percolating-reservoir having one end open and the opposite end partially closed, and provided with an outlet, the piston adjustable within the reservoir having an annular groove provided with rubber packing, with means for tightening or loosening the same, and the the stop-cock for controlling the outlet. 4th. The combination of the cylindrical percolating-reservoir having one end open and the opposite end partially closed, and provided with an outlet, the piston head adjustable within the reservoir having an annular groove provided with rubber packing, with means for tightening or loosening the same for the purpose of accommodating the adjustment and tightening the same, and the flexible tube connected to the discharge end of the reservoir. 5th. The combination of the cylindrical percolating-reservoir having one end open and the opposite end partially closed, and provided with an outlet, the piston head adjustable within the reservoir having an annular groove provided with rubber packing, with means for tight-

ening or loosening the same, for the purpose of accommodating the adjustment and tightening the same, and the flexible tube, one end connected to the discharge end of the reservoir, and the opposite end discharging into a vertically-adjustable receptacle for producing maceration under pressure. 6th The combination of the cylindrical percolating-reservoir having one end open and the opposite end partially closed, provided with an outlet, the piston head adjustable within the reservoir, provided with means for packing and adjusting the piston, and the liquid-reservoir connected with flexible tube with the adjustable piston, substantially as described 7th. The combination of the cylindrical percolating-reservoir having one end open and the opposite end partially closed, the discharge end being controlled by a stop-cock, the piston adjustable within the reservoir provided with means for packing and adjusting the piston, and the vertically-adjustable liquid-reservoir connected with the adjustable piston with flexible tube. 8th. The combination of the cylindrical percolating-reservoir having one end open and the opposite end partially closed, the flexible tube connected to the discharge end discharging into a vertically-adjustable receptacle, the piston adjustable within the reservoir with means for adjusting and packing the same, and the vertically-adjustable reservoir connected with the adjustable piston-head, with flexible tube for producing maceration of the drug under pressure. 9th. The combination of the tubular percolating-reservoir, substantially of the same diameter, one end open and the opposite end partially closed, and the piston head adjustable therein with means for adjusting and packing the same. 10th. In combination with a percolator and an elevated liquid-reservoir connected therewith, a receiving-reservoir and means for adjusting the height thereof, substantially as shown and described. 11th. The combination of a series of percolators, the lower end of each being connected with the upper end of the succeeding one, and the end percolators being connected with the liquid-reservoir and receiving-vessel respective *y*, substantially as shown and described.

No. 28,404. Mechanism for Coiling the Sliver issuing from a Fibre Drawing Frame for Transferring to a Spinning Machine.

(*Machine à enrouler les boudins sortant des étireurs et les porter aux machines à filer.*)

Charles Coyle, Montreal, Que., 21st January, 1888, 5 years.

Claim.—1st. Mechanism for automatically laying the sliver issuing from a fibre drawing frame in a coil, to be conveyed to the spinning machine, consisting of a revolving coiling guide for the sliver, carried in suitable framing, means for rotating such guides, and means for feeding the sliver to same. 2nd. Mechanism for automatically laying the sliver issuing from a fibre drawing frame in a coil, to be conveyed to the spinning machine, consisting of a stationary guide for the sliver carried in suitable framing, a revolving disc or stand on and by which the coil is built, means for rotating such disc and rolls for feeding the sliver to said guide, as set forth. 3rd. Mechanism for the purpose described, consisting of a revolving coiling guide for the sliver, a revolving disc or stand for carrying a receptacle for same, suitable framing for carrying such guide and disc, means for rotating same in reverse directions, and means for feeding the sliver to such guide, this latter being perforated eccentrically to the axial line of the revolving disc or stand. 4th. The machine for automatically laying the sliver issuing from a hemp drawing frame in a coil, to be conveyed to the spinning machine, substantially as shown and herein described.

No. 28,405. Snow Plough. (*Charrue à neige.*)

Levi Brillinger and Rev. Laurence H Kirby, Collingwood, Ont., 21st January, 1888; 5 years.

Claim—1st A series of blades fixed to the nose of a snow plough, as shown and described. 2nd. A series of blades carried in a frame attached to the nose of a snow plough, substantially as and for the purposes specified. 3rd. A series of blades A, carried in a frame B attached to the nose of the snow plough C, and braced by the rods D, substantially as and for the purpose specified. 4th. A series of blades A, carried in a frame B, attached to the nose of the snow plough C, and braced by the rods D, in combination with the side plates E, substantially as and for the purpose specified

No. 28,406. Car Wheel. (*Roue de char.*)

The Peckham Car Wheel Company (assignee of Edgar Peckham), Syracuse, N.Y., U.S., 21st January, 1888, 5 years.

Claim—1st. A car wheel composed of a hub, an outer ring, plates secured to the opposite sides of said ring and to a hub, a non-metallic core filling the cavity between the aforesaid plates, and seated directly upon the hub, and a tire secured to the outer ring, substantially as shown and described. 2nd. In a car wheel, the combination, with the hub, of a hollow metallic wheel body composed of an outer ring, plates secured to opposite sides of said outer ring, and a non-metallic core filling said cavity between said plates, said cavity being enlarged by a bulge of the inner side plate around the central eye thereof, and the non-metallic core enlarged correspondingly, whereby an enlarged bearing for said core is secured upon the hub, substantially as described and shown. 3rd. The combination, with the hub and hollow metallic body, of a non-metallic core seated directly on the hub, and clutch connections between the hub and metallic body, to compel the latter, together with the core, to rotate with the hub, substantially as set forth and shown. 4th. In a car wheel, the combination, with the hub, of a metallic wheel body, having an internal cavity extending to the central eye of said body, and a core of paper or analogous elastic material in said cavity, said core projecting over the central eye of the wheel body, to bear on the hub and sustain the eye of the metallic body isolated from the hub, substantially as and for the purposes set forth. 5th. The combination, with the hub, of the annular metallic plates P, P1, having central eyes of greater diameter than the hub, the ring C secured between the peripheral portions of said plates, and the core D, of paper or C, locked together by a clutch formed integral with said parts, as and for the purpose specified 7th In a car wheel, the combination of the plates P, P1, provided with perforations and the ring C, formed with outward projecting lugs *l*, *l* entering the aforesaid perforations, substantially as described and shown. 8th. In combination, with the wheel body and tire securing devices, the tire T formed at one edge of its inner peripheral face, with the undercut inward projecting flange *t* and at the opposite edge of said face, with the under-cut groove *a*, substantially as described and shown. 9th The combination of the tire, formed at one edge of its inner peripheral face, with the under-cut inward projecting flange *t*, and at the opposite edge of said face, with the under cut groove *a*, the ring C formed with the laterally projecting flange *u*, interlocking with the flange *a*, the plate P abutting against the exterior of the overhanging portion of the flange *t*, the plate P1 abutting against the tire, the retaining ring R having the outward flange *b* and seated in the groove *a*, and the ring R1 inserted between the ring R and ring C, substantially as described and shown. 10th In combination, with plates P, P1, provided with the reinforcing plates P, P1 the hub H, provided at one end with the flange F, and overhanging projection *f* on said flange, and provided at the opposite end with the groove *e*, the collar I seated in said groove and provided with the overhanging projection *i*, and bolts *d* and *e* for securing the plates P, P1 to the ring C and to the hub, substantially as described and shown.

No. 28,407. Store Stool. (*Banc de magasin.*)

Hubert R. Ives (assignee of George Scott), Montreal, Quebec, 21st January, 1888, 5 years.

Claim—1st. The combination, in a store stool, of the vertical rod A and bracket B of any configuration, whereby a clear space is maintained between the stool seat and counter, the socket D with ledge for retaining seat in position screwed to the floor, the arm E holding in position the upper end of rod A, substantially as described. 2nd. The combination of the wood seat C (enlarged view) with plate F attached to wood seat C to which plate are attached the bracket B by lugs *a*, *a*, and *b*, *b*, with pin for turning the seat, on this plate is cast the post *e*, supported by bracket *f* also, to plate F is hinged a curved lock bar H to retain the seat in a level position when being used, substantially as described in specifications and for the purpose set forth.

No. 28,408. Nut Lock. (*Arrête-écrou.*)

Walter T Ross, Quebec, Que., 21st January, 1888. 5 years.

Claim.—1st. As a nut lock and in combination, a screwed bolt with longitudinal groove cut in it, nut threaded on bolt and washer let into groove in bolt and turned down on sides of nut, all as herein set forth. 2nd. The combination of a screwed bolt, with a longitudinal groove cut in it, a threaded nut and a washer, with a projection fitting in the groove of bolt, and having its corners removed, and projecting sides split, so as to form folding pieces, any of which can be turned down on nut, all as herein described.

No. 28,409. Packing Box. (*Boîte d'empaquetage.*)

Albert T. Linderman, Whitehall, Mich., U. S., 21st January, 1888, 5 years.

Claim.—1st A package, comprising a body having sides, ends, top and bottom, and a supporting crate of angle woods embracing all the corners of the box body, mitred at the corner joints, and there fastened together by enclosing bands, as set forth. 2nd. In combination with the veneers F, or with a box body, the angle-woods A having mitred ends and slots or grooves, or both, to retain the wire fastener B in place, and the wire fastener B to hold the angle-woods together at the corners of the box, substantially as shown and described. 3rd. In combination with the box body F the angle-woods A, A, A, formed at the ends with an irregular interfitting mitre joint to prevent slipping of the angle woods at such joint, and means for holding the angle-woods together at such jointure to form a supporting crate for such box body, substantially as set forth. 4th. In combination with the box body F and angle-woods A, the wire fastener B joined by loops D, and fastened by staples E, whereby are formed a fastened for the box in shipment, and afterwards a hinge to the cover of the box, substantially as shown and described. 5th. 5th. The box body F, the outside supporting angle-woods A, the wire fastener B, which holds the several angle-woods and thereby the box together at the corners, in combination with the seal C attached to the wire fastener B for sealing the box, substantially as set forth. 6th. An independent supporting crate frame of angle-woods, so joined at the cubical corners as to render the inside and outside surfaces of the joining pieces of angle-woods smooth or even at the point of jointure, and means at or near the jointure for fastening the several pieces of angle-wood to each other in this position to form a crate, substantially as set forth.

No. 28,410. Single Plate Carriage Spring.

(*Ressort de voiture d'une seule lame.*)

John B. Armstrong, Guelph, Ont., 21st January, 1888; 5 years.

Claim.—1st. A tempered steel elliptic spring, composed of two single plates having their ends properly connected, each plate being tapered from the point where the load is carried to each end at a taper of 18-64ths of an inch to the foot, or one and one-half sixty-fourths of an inch to the inch, the portions of the plate so tapered being straight when the spring is in its normal position, substantially as and for the purpose specified. 2nd. A tempered steel spring composed of a single plate, tapered from the point where the load is carried to each end, at a taper of 18-64ths of an inch to the foot, or one and one-half sixty-fourths of an inch to the inch, the portions of the plates so tapered being straight when the spring is in its normal position, substantially as and for the purpose specified. 3rd. A spring, having a dove-tail recess made in the centre of its bearing, in combination with a rivet-shaped bit having its shank inserted into the dovetail recess, and hammered so as to cause the shank to spread and fill the dovetail recess, substantially as and for the purpose specified.

No. 28,411. Cultivator. (*Scarificateur.*)

James G. Mallery, Flint, Mich., U.S., 21st January, 1888, 5 years.

Claim.—1st. In a cultivator, the combination of the central bar A, the side bars C, bent at right angles at their forward ends and pivotally secured between the ends of the head plates D, with the spreader bars D1, link E and set screw F, substantially as described. 2nd. In a cultivator, the combination of the bars A, C, pivotally secured together at their forward ends and provided with the spreader bars D1, with the cultivator standards G, corrugated heads I, wedge-shaped corrugated disks J and bolts K, substantially as described. 3rd. The combination of the bars A, C, pivotally secured together at their forward ends and provided with the draft hook B, and spreader bars D1, handles L and standards M, with a cultivator wheel N adapted to be adjusted in a radial vertical plane in relation to the cultivator teeth, substantially as described. 4th. In a cultivator, the combination of the bars A, C, headplates D, spreader bars D1, link E, set screw F, cultivator standards G, heads I, wedge-shaped disks J, and vertically radially adjustable cultivator wheel N, the parts being constructed, arranged and operating substantially in the manner and for the purpose described. 5th. In a cultivator, the combination of the bars A, C, draft hook B, head-plates D, spreader bars D1, standards G, teeth H, corrugated heads I, corrugated wedge-shaped disks J, handles L, standards M, wheel N, hangers O, corrugated faces P and disks R, the parts being constructed, arranged and operating substantially in the manner and for the purpose, described. 6th. In a cultivator, the combination, with the central bar A, and head-plates D, having lugs *a*, of the bars C, bent at right angles at their front ends, and provided with holes for engaging the said lugs and the spreader bars D1, substantially as described. 7th In a laterally adjustable cultivator, the combination of the bars A and C, with the cultivator wheel N, hangers O, corrugated heads P and corrugated disks R, substantially as described.

No. 28,412. Culinary utensil.

(*Ustensil de cuisine.*)

Fred H Hill, Boston, Mass., U.S., 21st January, 1888, 5 years.

Claim.—1st. In combination with a kettle *a* having the odor tube *c*, and the channel *d* adapted to hold water for the purpose of forming a water seal, and said channel having its inner wall *a1* below the level of the top of the odor-tube, the domed cover *e* having a downturned flange *e1* fitting loosely within the channel of the water-seal, all substantially as described. 2nd. The improved kettle having the odor-tube with an out let at the bottom of the kettle, and its top located above the level of the inner edge of the wall of the water-seal channel, and the water seal *d*, all substantially as described. 3rd. In combination, with a kettle having the water seal channel and the odor-tube *c*, the cover having a flat surface *f* that overlies and partly closes the mouth of the odor-tube *c*, said cover having also a flange that fits within the water seal channel, all substantially as described.

No. 28,413. Separating Machine for Cleaning Groats. (*Machine à séparer pour nettoyer les gruaux.*)

Emil Weiss, Berlin, Germany, 31st January. 1888; 5 years.

Claim.—1st. The combination of the feed hopper, outer casing, the blast-fan, the vertical blast trunk having lateral blast openings, a series of movable rolls arranged transversely of the outer casing with intervals between them, and forming dividers for grading the material falling through the air-current, and the spouts or troughs *c3* arranged to receive the grated material, substantially as set forth. 2nd. The combination of the feed-hopper, the outer casing, the blast fan, the vertical blast trunk having lateral blast openings, the inclined plates attached to the inner wall of the blast trunk, the series of movable rolls having intervals between them, and serving as dividers for the falling material, and the boards or scrapers *p*, substantially as set forth. 3rd. The combination of the feed hopper, the outer casing, the movable dividing rolls, the blast-fan, the vertical blast trunk having lateral openings, the vertical slide *s* having openings *e* and registering therewith, and the inclined deflecting boards *f*, *f1*, etc. attached to said slide above the openings *e* and graduated in width, the widest being the upper-most, substantially as set forth.

No. 28,414. Steam Boiler and Combustion Chamber. (*Chaudière à vapeur et foyer.*)

Allan Stirling, Yonkers, N.Y., U.S., 21st January, 1888; 5 years.

Claim.—1st. A boiler composed of an inclined box made of four plates rivetted together, and a series of inclined drop tubes dependent from the bottom thereof, substantially as herein described. 2nd. The combination of the body of a boiler, employing drop tubes of different lenths, with a series of refractory partitions, substantially as herein described. 3rd. The combination of the body of a boiler employing drop tubes, with a furnace whose roof is built in steps, substantially as herein described. 4th. The combination of the body of a boiler employing drop tubes, with a brick arch built in the furnace, substantially as herein described. 5th. The combination of the body of a boiler with drop tube, with a mud drum connected with down-draught pipes, kneed pipes and a blow-off pipe substantially as herein described. 6th. The combination of the body of a boiler, with drop tubes with a man-hole with removable stays, substantially as herein described.

No. 28,415. Machine for Making Spur Wheel Fencing. (*Machine à faire les garde-pignons.*)

Charles W. Larm and Chester A. Hodge, (assignees of Christian C. .. Hill,) Chicago, Ill., U.S., 23rd January, 1888; 5 years.

Claim.—1st. In a star or spur wheel fence machine, the combination, with a fence wire feed device, a spur strip feed device, a punch and die for making the hole in the star, a star punch and die, a star feed slide, a push bar for pushing the star into the path of said feed slide, a pivot wire feed device, knives for severing the pivot, a reciprocating horn, a pair of vertically moving pivot benders, a pair of horizontally reciprocating benders, a clincher between said vertically moving benders, and mechanism for operating said devices in due order, substantially as specified. 2nd. The combination, with a spur wheel feed device, of a pivot wire feed device, pivot wire bending or folding devices, a horn or nose, and mechanism for operating said devices in due order, substantially as specified 3rd. In a spur wheel fence machine, the combination, with suitable guides for the two fence strands, of a reciprocating spur wheel feed slide for moving the spur wheels into position between the two fence strands, and a pivot wire feed device for trusting the pivot wire through the opening in the spur wheel, and mechanism for operating said devices in due order, substantially as specified. 4th. The combination, with a fence wire feed device, of a star feed slide K having pockets *k* for the star, a yielding side guide M and a pivot wire feed device, and mechanism for operating said devices in due order, substantially as specified. 5th. The combination, with a fence wire feed device, of a star feed device, a pair of spring clamps *d4*, *d4*, a pivot wire feed device, and mechanism for operating said devices in due order, substantially as specified. 6th. The combination, with a fence wire feed device, of a star feed device, a pair of spring clamps *d4*, *d4*, and a pivot wire feed device, and a slotted horn or nose D, and mechanism for operating said devices in due order, substantially as specified 7th. The combination, with a fence wire feed device, of a star feed device, a pair of spring clamps *d4*, *d4*, a pivot wire feed device, a slotted horn or nose D having eyes or holes *d*, *d* for the fence wires, and mechanism for operating said devices in due order, substantially as specified. 8th. The combination, with a fence wire feed device of a star feed device, a pair of spring clamps *d4*, *d4*, a pivot wire feed device, a slotted horn or nose D, pivot wire bending or folding devices, and mechanism for operating said devices in due order, substantially as specified. 9th. The combination, with a fence wire feed device, of a star feed device, a pair of spring clamps *d4*, *d4*, a pivot wire feed device, a reciprocating slotted horn or nose D, pivot wire bending or folding devices, and mechanism for operating said devices in due order, substantially as specified. 10th. The combination of a star strip feed device, with punch and die F F1, punch and die G, G1, pusher H, reciprocating star feed slide K, and mechanism for operating said devices in due order, substantially as specified. 11th. The combination of a star strip feed device with punch and die F, F1, punch and die G, G1, pusher H and reciprocating star feed slide K having pockets *k*, and mechanism for operating said devices in due order, substantially as specified. 12th. The combination, with a star strip feed device, with punch and die F F1, punch and die G G1, pusher H and reciprocating star feed slide K having pockets *k*, yielding side guide bar M having a pawl or pin *m3* to extract the star on the backward movement of said feed slide K, and mechanism for operating said devices in due order, substantially as specified. 13th. In a star wheel fencing machine, the combination, with a pair of parallel guides for the two fence wires, of star wheel feed slide K reciprocating in a plane between the fence wires, and mechanism employed for operating said slide, substantially as specified. 14th. In a star wheel fencing machine, the star wheel feed slide K, reciprocating in a plane between the fence wires and having bevel edges, in combination with friction guide rollers *k2*, and mechanism for operating said slide, substantially as specified. 15th. In a star wheel fence machine, the combination, with a pair of parallel guides for the two fence wires, of star wheel feed slide K reciprocating in a plane between the fence wires, in combination with an operating arm K1, having a yielding or spring connection with said feed slide, and mechanism for operating said slide, substantially as specified. 16th. In a star wheel fencing machine, the combination of reciprocating star feed slide K, friction guide rollers *k2*, operating cam *k4*, lever *k1*, connecting link *k5*, pivot *k6*, and spring *k7*, substantially as specified. 17th. In a star wheel fencing machine, the pivot bender horn D having eyes *d*, *d* for the fence wires, and slot *d1* for the star wheel, the parts of said horn, on each side of said slot, being rigid or unmovable in respect to each other, substantially as specified. 18th. In a star wheel fencing machine, the pivot bender horn D having eyes *d*, *d* for the fence wires, and slot *d1* for the star wheel, in combination with mechanism for advancing and withdrawing said horn, substantially as specified. 19th. In a star wheel fencing machine, the combination of pivot bender horn D, with vertically moving pivot benders N1, N2, one on each side of said horn, and mechanism for operating said devices in due order, substantially as specified. 20th. In a star wheel fencing machine, the combination of pivot bending horn D, with vertically moving pivot benders N1, N2, one on each side of said horn, and longitudinally moving pivot benders P, P, and mechanism for operating said devices in due order, substantially as specified. 21st. In a star wheel fencing machine, the combination of pivot bender horn D, with vertically moving pivot benders N1, N2, one on each side of said horn, and a clincher N3 between said benders N1, N2, and mechanism for operating said devices in due order, substantially as specified. 22nd. In a star wheel fencing machine, the combination of pivot bending horn D, with vertically moving pivot benders N1, N2, one on each side of said horn, longitudinally moving pivot benders P, P, and a clincher N3, and mechanism for operating said devices in due order, substantially as specified. 23rd. In a star wheel fencing machine, the combination of pivot bender horn D, with vertically moving pivot benders N1, N2, one on each side of said horn, and a stationary knife N, said bender N1 having a cutting edge operating in conjunction with said stationary knife, and mechanism for operating said devices in due order, substantially as specified. 24th. In a star wheel fencing machine, the combination, with punch and die F, F1, of punch and die G, G1, and and a star strip feed lever E having pawl *e* adapted to engage the holes punched in the star strip by said punch and die F F1, mechanism for operating said devices in due order, substantially as specified. 25th. In a star wheel fencing machine, the combination, with punch and die F F1, of punch and die G G1, and a star strip feed lever E having pawl *e* adapted to engage the holes punched in the star strip by said punch and die F F1, and a lever G3 and cam G4 for simultaneously operating both said punches, and mechanism for

operating said devices in due order, substantially as specified. 26th. In a star wheel fencing machine, the combination of benders N, N1, clincher N3, head N4, cam N5, lever N6, link N8 and swinging arm N9, to which said head N4 is secured, substantially as specified. 27th. In a star wheel fencing machine, the combination, with horizontally reciprocating benders P, P, of cam P2, lever P1, link P4, rocking cam head P5, having inclined cam grooves p, p on its peripheral face, pins p1, p1 secured to said benders P, P, and mechanism for operating said devices in due order, substantially as specified.

No. 28,416 Automatic Safety Shutter for Elevator Shafts. (*Trappe de sûreté pour puits d ascenseurs.*)

William Pirrie and James E. Wize, Vancouver, B. C., 27th January, 1888; 5 years.

Claim—1st. In an elevator, the sliding doors or shutters F having rollers B, as shown in figure 1, at each end, in combination with rails H, substantially as and for the purpose hereinbefore set forth. 2nd. In an elevator, the combination of the doors or shutters F with the guides C, substantially as and for the purpose hereinbefore set forth. 3rd. In an elevator, the doors or shutters F and pulleys E, in combination with weights D, substantially as and for the purpose hereinbefore set forth. 4th. The combination of an elevator seat and guides C, substantially as and for the purpose hereinbefore set forth. 5th. The combination, with an elevator door or shutter F, of the friction rollers I and weights D, substantially as and for the purpose hereinbefore set forth. 6th. The combination in an elevator, of the seat, the top and bottom of the elevator frame having guides C, doors or shutters F having rollers B, as shown in figure 1, pulleys E and weights D, and friction rollers I, substantially as and for the purpose hereinbefore set forth.

No. 28,417. Dish Washing Machine.

(*Machine à laver la vaisselle.*)

Phebe E. Cox, Readington, N. J., U. S., 27th January, 1888; 5 years.

Claim—1st. The dish-car constructed of a bottom F, side boards G, an end board H having a handle arranged above the side boards, an opening below said end board, series of horizontal cross-pieces K connecting the ends of the side boards, and formed with series of notches L arranged in vertical planes, and the series of longitudinal partition bold removably in said notches L, substantially as shown and described.

No. 28,418. Band Pulley. (*Poulie à courroie.*)

Wallace H. Dodge, Mishawaka, Ind., U. S., 27th January, 1888; 5 years.

Claim.—1st. A pulley having a wooden rim, and a metallic center and arms, the ends whereof are provided with ribs expended at their outer ends, embedded and rigidly fastened in corresponding notches cut in the inner periphery of said rim, substantially as set forth. 2nd. An iron center for a pulley, provided at the ends of its arms with lateral curved projections concentric with the axis of the pulley, and upon the exterior surface of said projections, radial ribs expanded at their outer ends, combined with a wooden lagging or rim having notches to receive and firmly hold said ribs and rim together to constitute a pulley, as set forth. 3rd. An iron center hub for a pulley, made in two parts separable through the centre of the hub, and united by clamping bolts, each arm being terminated with a transverse rib expanded at its outer end, combined with a wooden rim provided with notches adapted to receive and rigidly hold said ribs, as set forth. 4th. In the manufacture of pulleys having wooden rims and metallic arms, the mode of attaching said arms herein described, that is to say: providing each arm with transverse T-head projections, or ribs, inserting said projections loosely into notches made in the inner peripheral surface of said rim, and filling the spaces within the several notches and around said ribs with a non-shrinking substance such as sulphur, substantially as set forth. 5th. A pulley having a wooden rim provided with notches *f*, and a metallic hub and spokes provided with projections or ribs, adapted to extend into said notches, combined with a non-shrinking filling of suitable material capable of being applied in a fluid or plastic condition, substantially as set forth. 6th. A pulley having a wooden rim, provided with notches *f* and a metallic hub and spokes provided at the end of each spoke with one or more transverse undercut ribs adapted to extend into said notches, combined with a non shrinking filling of sulphur, substantially as set forth. 7th A pulley having a wooden rim provided with notches *f*, and a metallic hub and spokes, each spoke having a separable head *g* provided with projections *d*, adapted to extend into said notches, and the notches adapted to be filled around said projections with a non-shrinking material *h*, to pack said projections in said notches, substantially as set forth.

No. 28,419. Machine for Testing Muscular Power. (*Machine à essayer la force musculaire.*)

Percival Everett, London, Eng., 27th January, 1888; 5 years.

Claim.—In a machine for testing muscular power and for indicating the same by the agency of a coin, the combination of a sliding seat pulling apparatus, connected by intermediate devices, substantially as set forth, with a shaft, lever *i*, *w*, *w1*, the coin receiving bucket on one of such levers, and its attached counterweight *j* for locking together these levers, and the rack *v1* serving to actuate the index hand, and means, substantially as described, for discharging the coin from its bucket.

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

1017. S. DAVIS, 2nd and 3rd 5 years of No. 21,093, from the 12th day of February, 1890. Improved Safety Truck Appliance for Railway Cars, 1st December, 1887.

1018. T. ROBERTSON, 3rd 5 years of No 8173, from the 6th day of December, 1887. Improvements on Lozenge Machines, 5th December, 1887.

1019. L. E. McKINNON, 2nd 5 years of No. 15,918, from the 7th day of December, 1887. Improvements in Vehicle Dashes, 5th December, 1887.

1020. THE ROYAL ELECTRIC CO., (assignee) 2nd 5 years of No. 15,917, from the 7th day of December, 1887. Improvements on Electro-Magnetic Devices, 5th December, 1887.

1021. THE ROYAL ELECTRIC CO., (assignee) 2nd 5 years of No. 16,051, from the 30th day of December, 1887. Improvements on Electric Air Lamps, 5th December, 1887.

1022. H. L. HIGGINBOTTOM, 2nd 5 years of No. 15,925, from the 7th day of December, 1887. Improvements in Whiffletree Hooks, 7th December, 1887.

1023. C. CLUTHE, 2nd 5 years of No. 15,954, from the 15th day of December, 1887. Improvements on Trusses, 9th December, 1887.

1024. R. BAIN, T. WEST and R. McCLAIN (assignees) 3rd 5 years of No. 8,256, from the 26th day of December, 1887. Improvements in Sewer Traps, 10th December, 1887.

1025. R. M. DOWNIE, 2nd 5 years of No. 16,077, from the 8th day of January, 1888. Improvements on Portable Drilling Machines for Oil and Water Wells, etc, 14th December, 1887.

1026. W. KING, 2nd and 3rd 5 years of No 24,079, from the 17th day of May, 1891. Improvements in Water Heaters, 17th December, 1887.

1027. THE VERMONT SNATH CO., (assignee), 3rd 5 years of No. 8,355, from the 26th day of January, 1888. Improvements in Scythe Fasteners, 21st December, 1887.

1028. W. LOCKERBY, 2nd 5 years of No. 15,999, from the 21st day of December, 1887. Improvements on Life Boats, 21st December, 1887.

1029. THE EDISON ELECTRIC LIGHT CO., (assignee) 2nd 5 years of No. 16,065, from the 10th day of January, 1888. Improvements on Sockets or Holders for Electric Lamps, 24th December, 1887.

1030. THE EDISON ELECTRIC LIGHT CO., (assignee) from the 23rd day of January, 1888. Improvements on Connections for Electric Circuits, 24th December, 1887.

1031. J. C. BUZZEL and F. T. FIFIELD, (assignees), 2nd 5 years of No. 16,061, from the 2nd day of January, 1888. Improvements in Lanterns, 26th December, 1887.

1032. W. P. HALE, 2nd 5 years of No. 16,125, from the 15th day of January, 1888. Improvements in Grain Binding Machines, 29th December, 1887.

1033. C. B. and F. T. FROST, and A. WOOD, 2nd 5 years of No. 16,071, from the 3rd day of January, 1888. Improvements on Mowing Machines, 3rd January, 1888.

1034. C. HIGHAM, 2nd 5 years of No. 16,223. from the 31st day of January, 1888. Improvements on Car Brakes. 4th January, 1888.

1035. THE NATIONAL SHEET METAL ROOFING CO. (assignee), 2nd 5 years of No. 16,766, from the 24th day of April, 1888. Improvements on Metal Roofing, 4th January, 1888.

1036. A. E. SPENCER, 2nd 5 years of No. 16,078, from the 8th day of January, 1888. Improvements on Bluing Paddles, 7th January, 1888.

1037. THE BAKER MANUFACTURING CO., 2nd 5 years of No. 16,097, from the 10th day of January, 1888. Improvement in a Teeth Cleaning Attachment for Hand Rakes, 9th January, 1888.

1038. W. E. ALLINGTON and W. H. CURTIS, 2nd and 3rd 5 years of No. 24,483, from the 20th day of April, 1892. Improvements in Dust Collectors, 9th January 1888.

1039. J. ANDERSON, 2nd 5 years of No. 16,088, from the 10th day of January, 1888. Improvements on Moulding Machines, 9th January, 1888.

1040. E. HUBER, 2nd 5 years of No. 21,497, from the 22nd day of April, 1890. Improvements on Vehicle Wheels, 9th January, 1888.

1041. L. K. JEWETT, 2nd 5 years of No. 16,124, from the 15th day of January, 1888. Improvements in a Wrecking and Construction Car for Railways, 14th January, 1888.

1042. G. E. COLLIER, 2nd 5 years of No. 16,232, from the 31st day of January, 1888. Improvements on Safety Valve for Steam Generators, 17th January, 1888.

1043. A. KLINE, 3rd 5 years of No. 8,283, from the 1st day of February, 1888. Improvements in Fanning Mills, 18th January, 1888.

1044. C. W. HIGHLY (assignee), 3rd 5 years of No. 9,259, from the 15th day of October, 1888. Improvements on Combined Corsets and Shirt Supporters, 18th January, 1888.

1045. THE MASSEY MANUFACTURING CO. (assignee), 3rd 5 years of No. 8,320, from the 22nd day of January, 1888. Improvements in Hay Rakes, 20th January, 1888.

1046. W. MORRISON, 2nd 5 years of No. 16,179, from the 23rd day of January, 1888. Improvements on Fire-Extinguishers, 23rd January, 1888.

1047. W. MARTIN, 2nd 5 years of No. 16,164, from the 23rd day of January, 1888. Improvements on Devices for Heating Railway Cars, 23rd January, 1888.

1048. W. MARTIN, 2nd 5 years of No. 16,222, from the 31st day of January, 1888. Improvements in Pipe Couplings, 23rd January, 1888.

1049. O. S. WOOD (assignee), 3rd 5 years of No. 8,398, from the 12th day of February, 1888. Improvements on the Art and on the Apparatus for Rock, etc., Drilling, Charging and Blasting under Water, 23rd January, 1888.

1050 D. ROGERS, 2nd 5 years of No. 16,327, from the 19th day of February, 1888. Improvements on Apparatus for Separating Refined Petroleum or its distillates into different gravities, etc., 23rd January, 1888.

1051. G. H. and W. H. Nichols, and J. B. T. Herreshoff, 2nd 5 years of No. 16,819, from the 5th day of May, 1888. Improvements on Copper Smelting Furnaces, 25th January, 1888.

1052. M. COVEL, 2nd 5 years of No. 16,246, from the 2nd day of February, 1888. Improvements in a Saw Bench for Hammering, Gauging and Filing Saws, 25th January, 1888.

1053. M. COVEL, 2nd 5 years of No. 18,280, from the 11th day of December, 1888. Improvements in a Saw Sharpening Machine, 25th January, 1888.

1054. F. I. HOWE, 2nd and 3rd 5 years of No. 25,893, from the 1st day of February, 1892. Improvements in Curry Combs, 25th January, 1888.

1055. THE PHOSPHOR BRONZE CO. (assignee), 2nd 5 years of No. 16,293, from the 15th February, 1888. Improvements in the Manufacture of Silicious Copper and Silicious Bronze, 28th January, 1888.

1056. J. FENSOM, 3rd 5 years of No. 8,380, from the 1st day of February, 1888. Improvements in Hoisting Machines, 31st January, 1888.

JANUARY LIST OF TRADE MARKS.

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3054. HENRY McINTOSH, Winnipeg, Man. Banff Springs Mineral Water. 12th January, 1888.

3055. EDWARD JAMES & SONS, of Sutton Road, Plymouth, County of Devon, England. Black Lead. 12th January, 1888.

3056. EDWARD JAMES & SONS, of Sutton Road, Plymouth, County of Devon, England. Blue. 12th January, 1888.

3057. THOMSON KINGSFORD, of Oswego, County of Oswego, State of New York, U.S.A. Culinary and Laundry Starch. 12th January, 1888.

3058. DUNBAR, McMASTER & CO., (Limited), of Gilford, County Down, Province of Ulster, Ireland. Thread. 12th January, 1888.

3059. SANDERSON BROS., Richmond Hill, County of York, Ontario. Proprietary Medicine, (Tonic). 12th January, 1888.

3060. KINNEY TOBACCO COMPANY, New York, U.S.A. Manufactured Tobacco, and particularly Cigarettes. 16th January, 1888.

3061. KINNEY TOBACCO COMPANY, New York, U.S.A. Manufactured Tobacco, and particularly Cigarettes. 16th January, 1888.

3062. KINNEY TOBACCO COMPANY, New York, U.S.A. Manufactured Tobacco, and particularly Cigarettes. 16th January, 1888.

3063. KINNEY TOBACCO COMPANY, New York, U.S.A. Manufactured Tobacco, and particularly Cigarettes. 16th January, 1888.

3064. KINNEY TOBACCO COMPANY, New York, U.S.A. Manufactured Tobacco, and particularly Cigarettes. 16th January, 1888.

3065. KINNEY TOBACCO COMPANY, New York, U.S.A. Manufactured Tobacco, and particularly Cigarettes. 16th January, 1888.

3066. JOHN HANBURY, Brandon, Man. Cigars. 16th January, 1888.

3067. JOHN S. PEARCE, London, Ontario. Corn. 16th January, 1888.

3068. J. H. CONNOR, Ottawa, Ontario. Clothes-Wringer. 19th January, 1888.

3069. MERIL MENARD et TANCREDE ROBITAILLE, faisant affaires sous la raison sociale de La Compagnie d'eau minérale de St. Hyacinthe, St. Hyacinthe, Quebec. Eau Minérale Naturelle des Sources de St. Hyacinthe, 19me Janvier, 1888.

3070. KIRKER, GREER & CO., (Limited), of Academy Street, Belfast, Ireland. Whisky. 19th January, 1888.

3071. KIRKER, GREER & CO., (Limited), of Academy Street, Belfast, Ireland. Whisky. 19th January, 1888.

3072. PETER BERTRAM, Dundas, County of Wentworth, Ontario. Axes. 24th January, 1888.

3073. PETER BERTRAM, Dundas, County of Wentworth, Ontario. Axes. 24th January, 1888.

3074. PETER BERTRAM, Dundas, County of Wentworth, Ontario. Axes. 24th January, 1888.

3075. PETER BERTRAM, Dundas, County of Wentworth, Ontario. Axes. 24th January, 1888.

3076. CH. JOBIT & CO., of Cognac, in the Republic of France. Bottled Brandy. 24th January, 1888.

3077. CH. JOBIT & CO., of Cognac, in the Republic o France. Brandy. 24th January, 1888.

3078. MARY SUSAN TAYLOR, Montreal, Quebec. Medicated Compound, (Laxative). 24th January, 1888.

3079. ARCHIBALD WINTERBOTTOM & SONS, Manchester, Lancashire, England. Tracing Cloth. 26th January, 1888.

3080. ARCHIBALD WINTERBOTTOM & SONS, Manchester, Lancashire, England. Tracing Cloth. 26th January, 1888.

3081. ARCHIBALD WINTERBOTTOM & SONS, Manchester, Lancashire, England. Tracing Cloth. 26th January, 1888.

3082. ARCHIBALD WINTERBOTTOM & SONS, Manchester, Lancashire, England. Tracing Cloth. 26th January, 1888.

3083. THÉOPHILE ROEDERER & CIE. de Reims, France. Vins de Champagne. 26 Janvier, 1888.

3084. THÉOPHILE ROEDERER & CIE. de Reims, France. Vins de Champagne. 26 Janvier, 1888.

3085. NARCISSE DUDEVOIR, Montreal, Quebec. Remèdes. 27 Janvier, 1888.

THE

CANADIAN PATENT OFFICE RECORD.

ILLUSTRATIONS.

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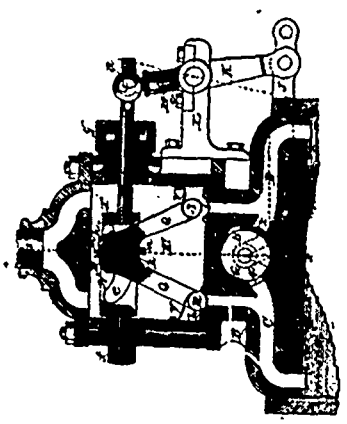
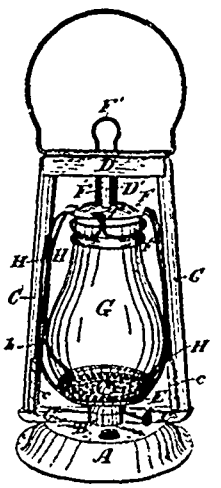
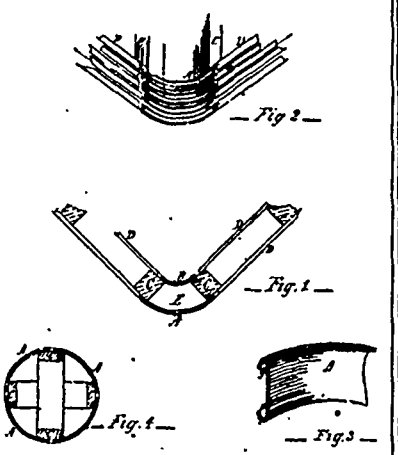


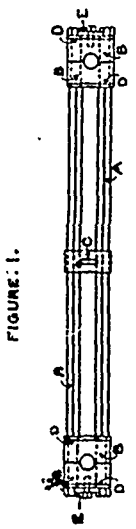
28127 Peirce's Steam Engine Valve.



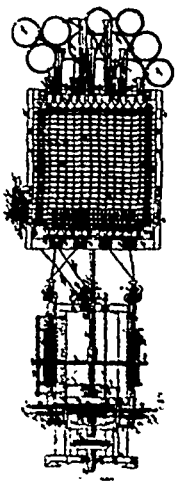
28128 Kennedy's Tubular Lantern.



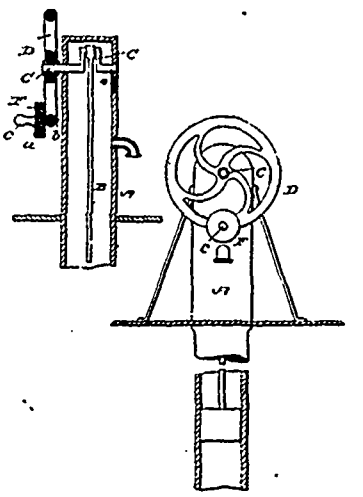
28129 Radigan's Metallic Circular Lath.



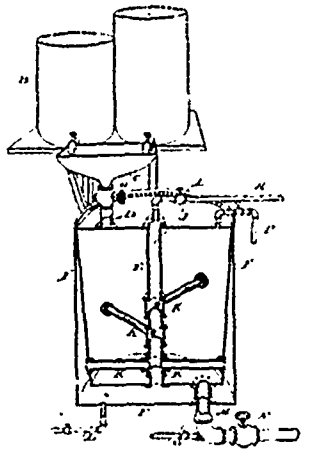
28130 Wyer's Connecting Rod for Engines, etc.



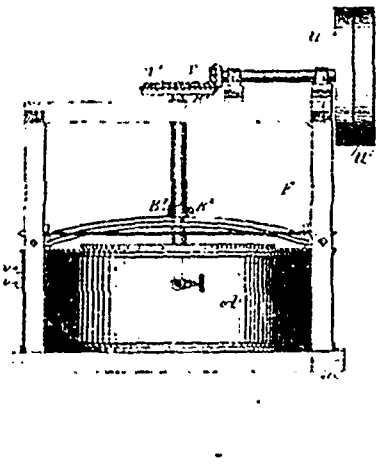
28131 Good's Drawing and Spinning Machinery.



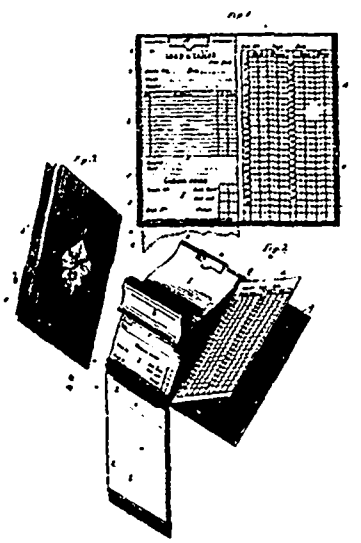
28132 Stoner's Balance Wheel for Pumps.



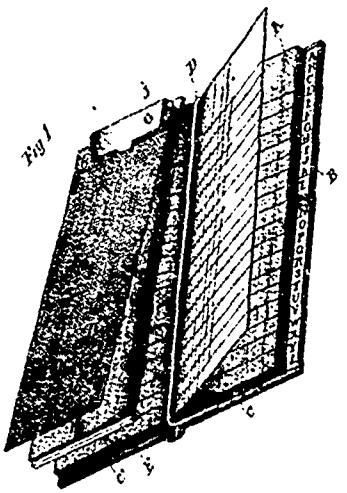
28133 Pritchard's Apparatus for Manuf'g. Soap.



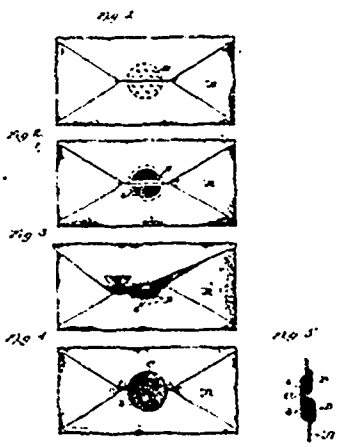
28134 Downend's Amalgamator and Concentrator.



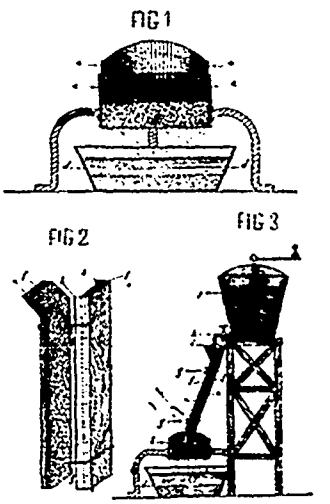
25135 O'Connor's Check Book.



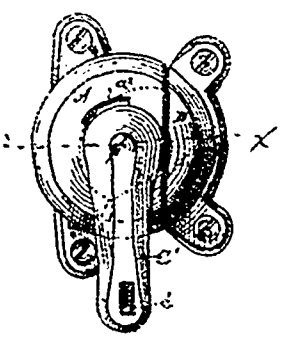
25136 O'Connor's Manifold Copying Book.



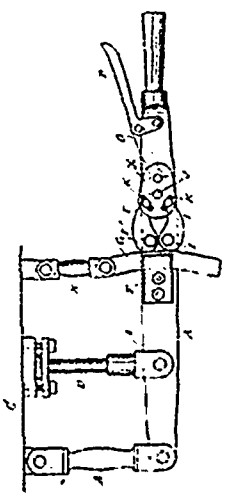
28137 Brooks' Art of Sealing Envelopes, etc.



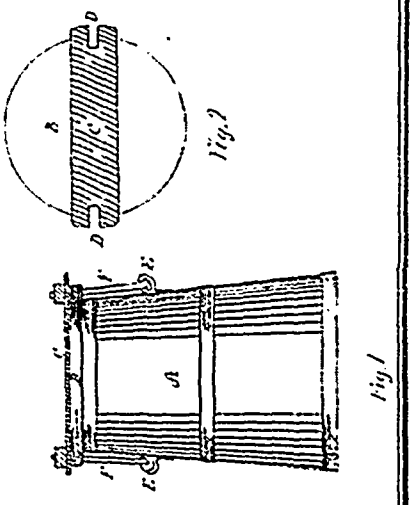
28138 Ropp's Process for Cleaning Beer Yeast



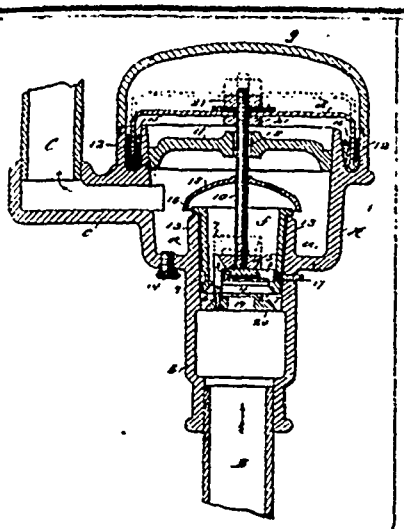
28140 Lister's Sash Lock.



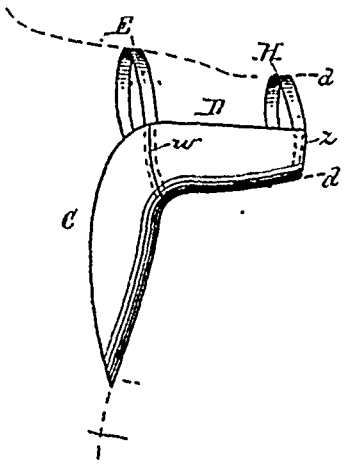
28141 McArthur's Attachment for Valves.



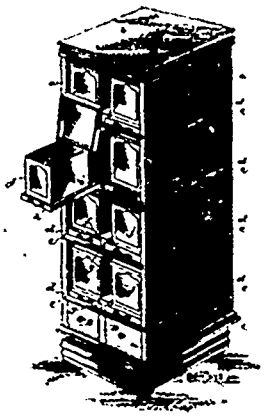
28142 Ames' Pickle Tub.



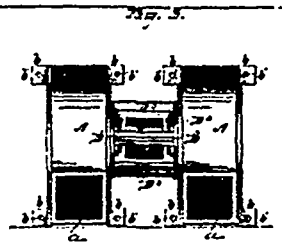
28143 Beatty's Gas Pressure Regulator.

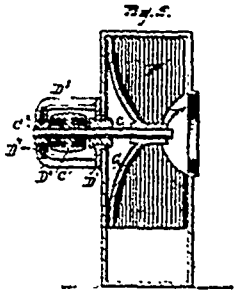


28144 Campbell's Dress Shield.

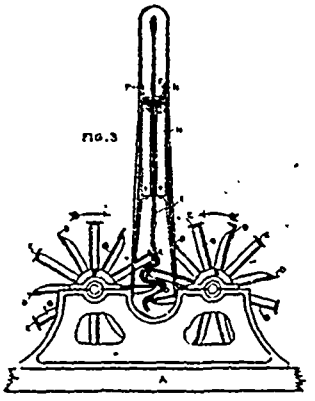


28145 Cleary's Show Case.

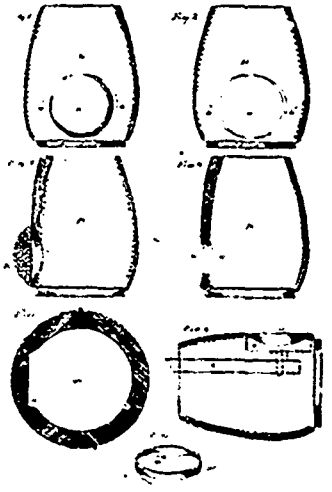




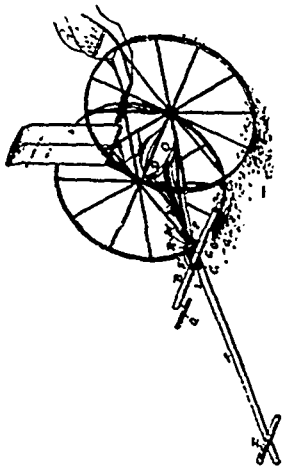
28146 Smith's Blower.



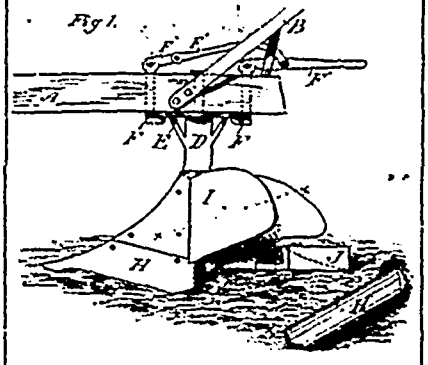
28147 Johnston's Apparatus for Preparing Flax, etc.



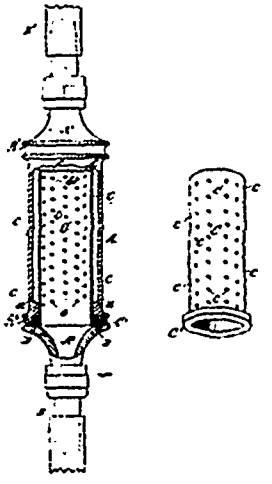
28148 Barnes' Lantern Globe, Chimney, etc.



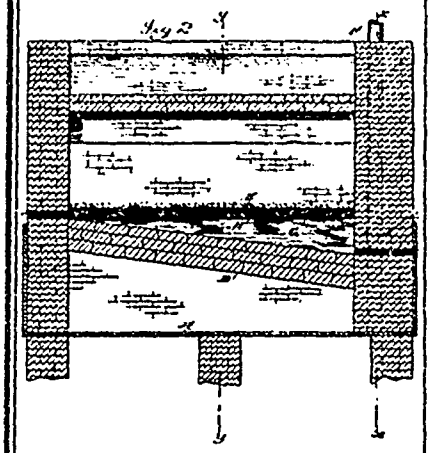
28 Procland's Doubletree.



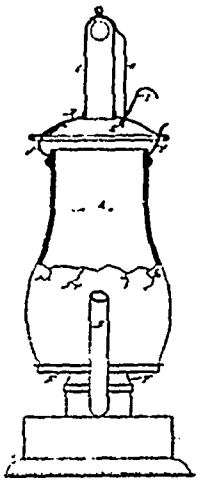
28151 McLean's Reversible Plough.



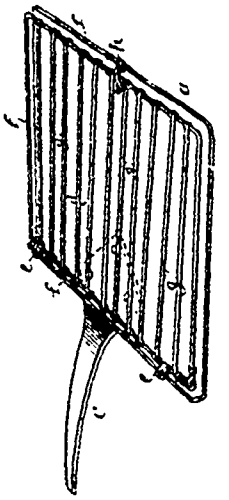
28152 Carson's Apparatus for Drawing Beer from Casks.



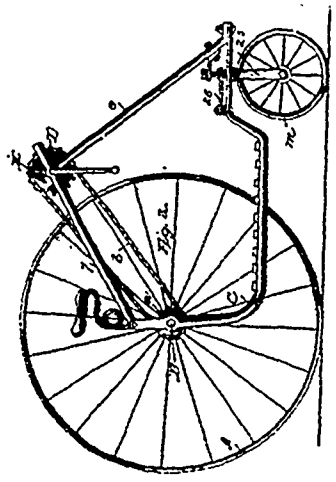
28153 Crooke's Process of Treating Copper Matte.



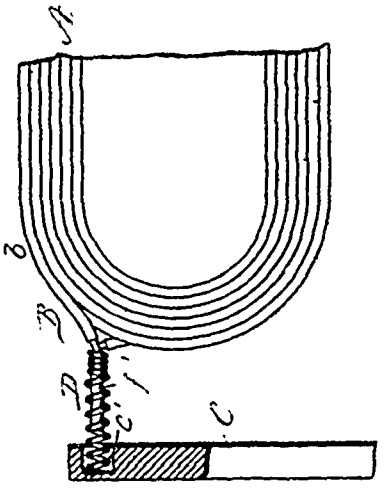
28154 Dietz's Tubular Lantern.



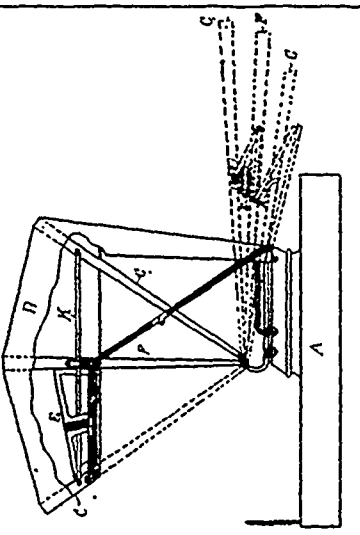
28155 Downey's Toaster.



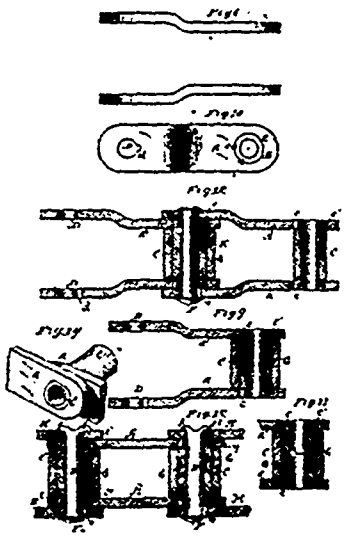
28156 Pearne's Tricycle.



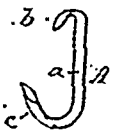
28157 Easton's Electric Connection.



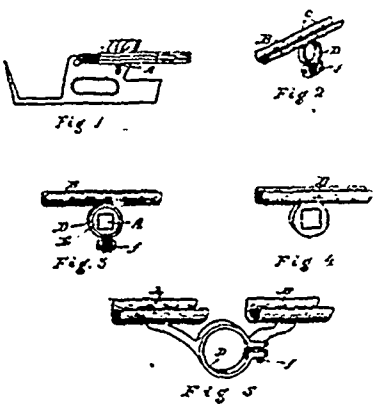
28158 Eldridge's Carriage Top.



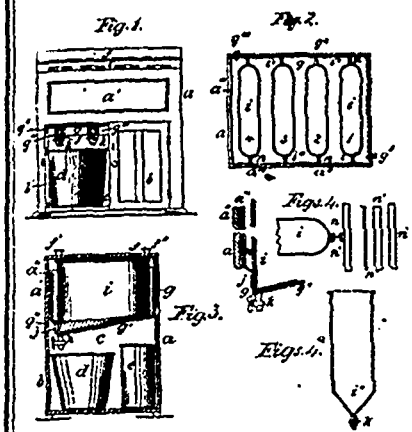
28159 Jeffrey's Chain.



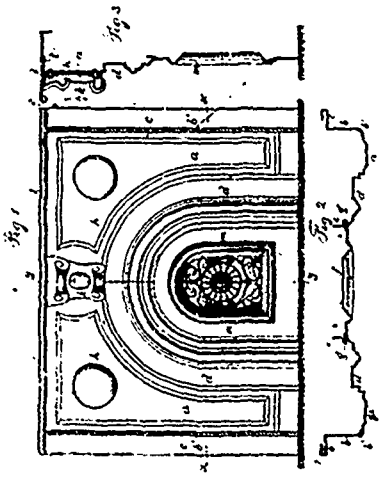
28160 Decker's Hog Ring.



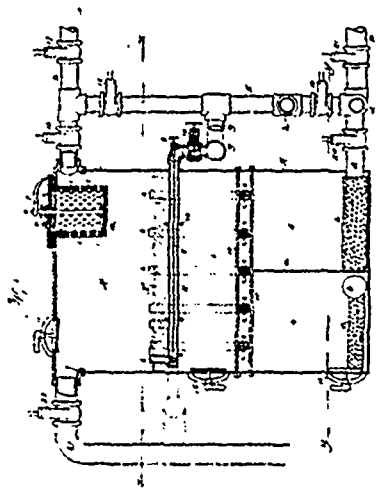
28161 Currier's Rest for Carriage Top Bows.



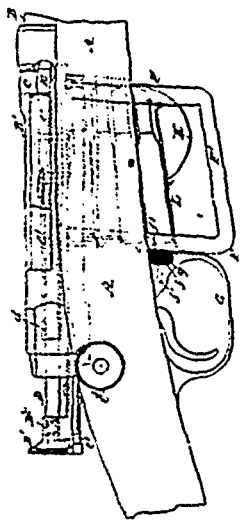
28162 Snyder's Creamer.



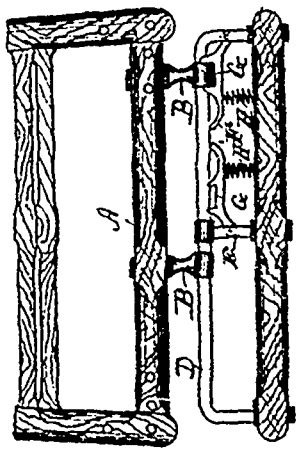
28164 Graves' Mantel.



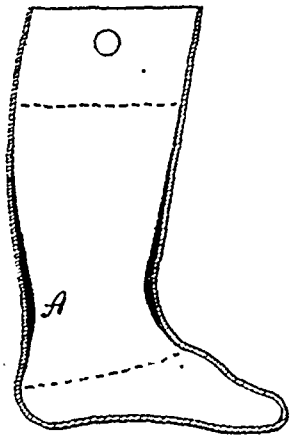
28165 Dentsch's Filter.



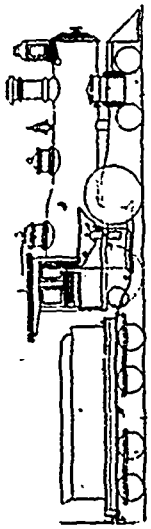
28166 Lee's Magazine Fire Arm.



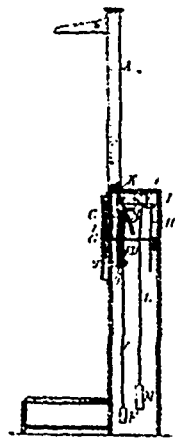
28167 Duffey & Woodford's Device for Shifting Vehicle Shafts.



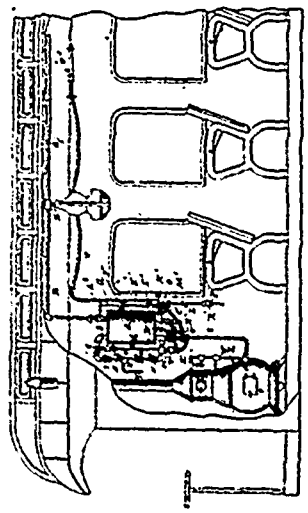
28168 Fargo's Felt Boot.



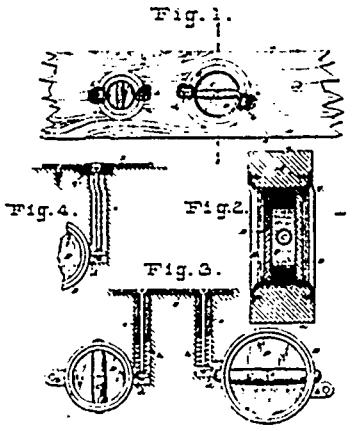
28169 Heaney's Heating Device for Railway Carriages.



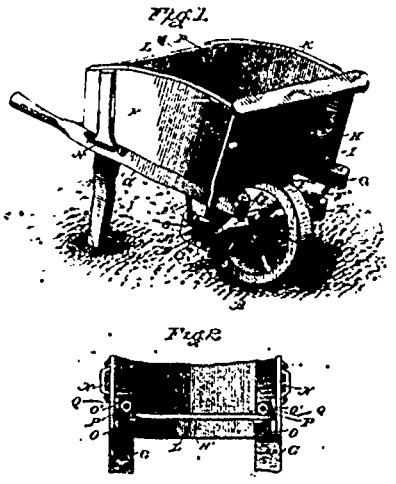
28170 Ingham's Height Measuring Apparatus.



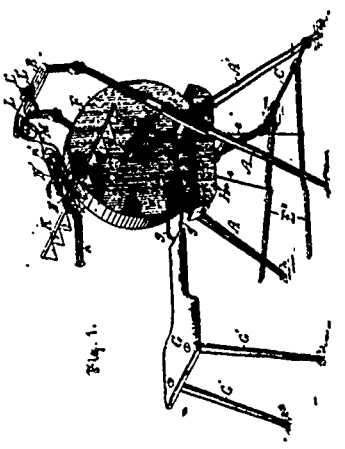
28171 Matlock & Fritz's Fire Extinguisher.



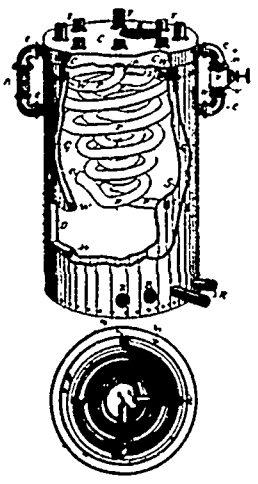
28172 Cook's Spirit Level.



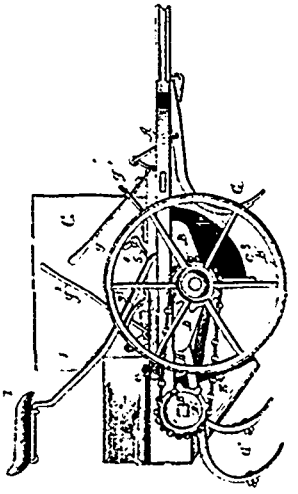
28173 Enderes' Wheelbarrow.



28174 Reid's Grinding Machine.

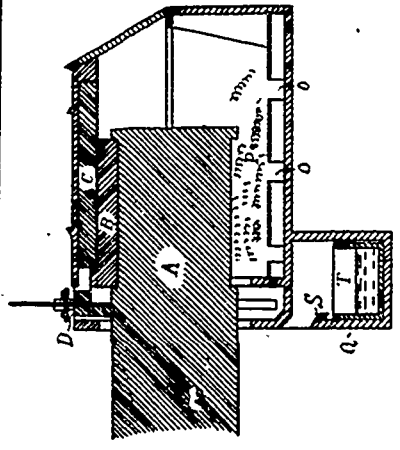


28175 Chase's Water Heater and Circulator.

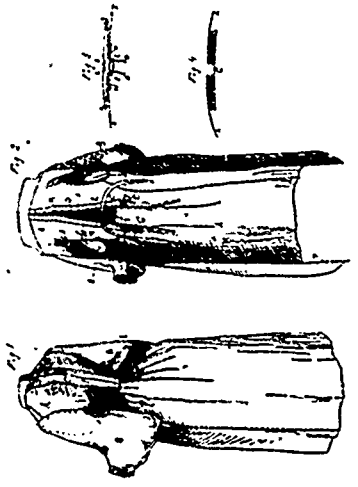


28176 Ogletree's Cultivator and Seeder.

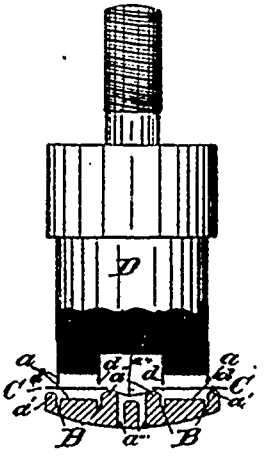
28177 Benedict's Truck.



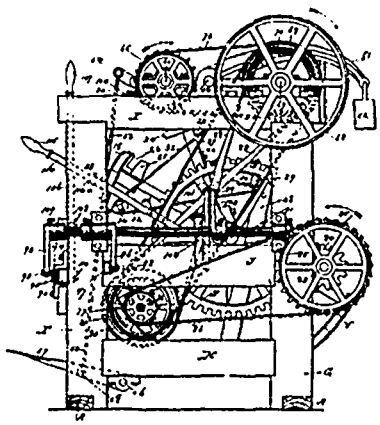
28178 Rogers' Car Axle Box.



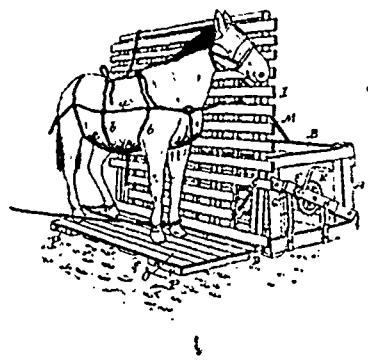
28179 Judson's Waterproof Garment.



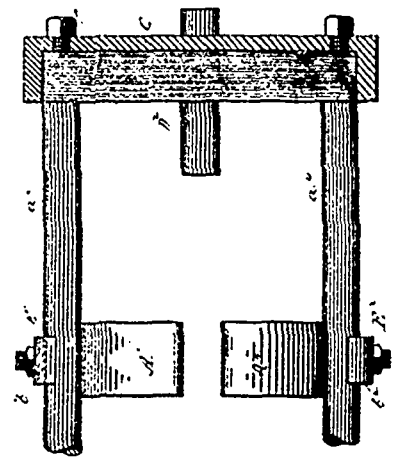
28180 Nordhausen's Button.



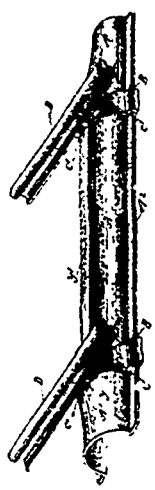
28181 Vaughn's Machine for Unhairing and Green Shaving Hides.



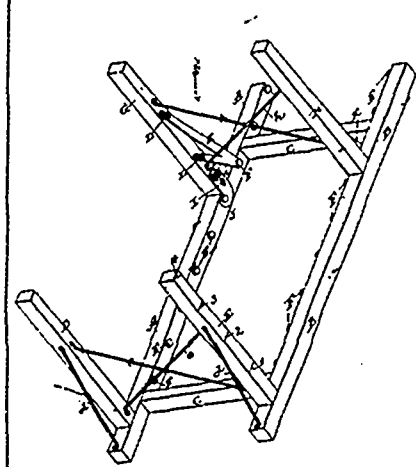
28182 Tiffany's Veterinary Table.



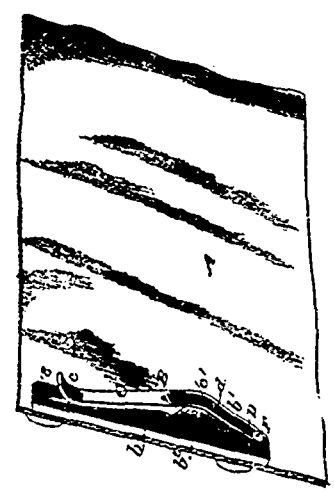
28183 Eastman's Frame for Dynamo Electric Machines.



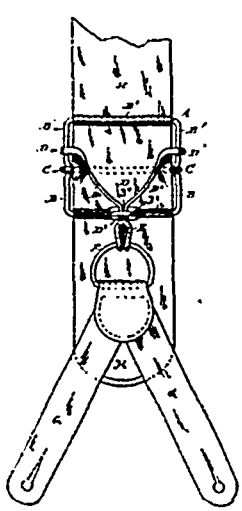
28184 Hall & Barnett's Railway Tie.



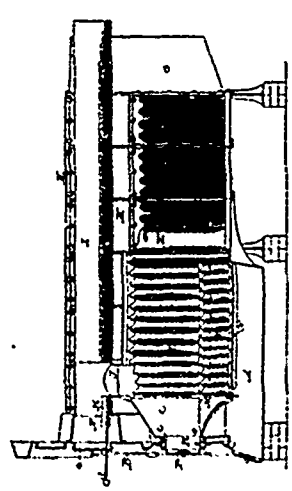
28185 Broughton's Adjustable Wood Measuring Rack.



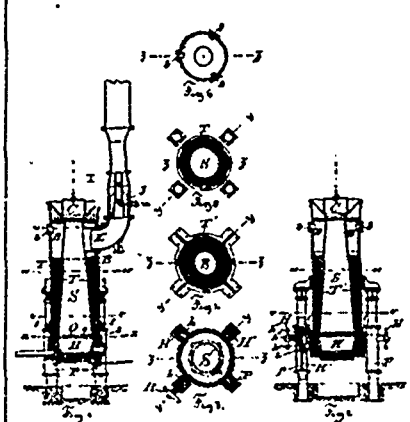
28188 Henry's Rein Holder.



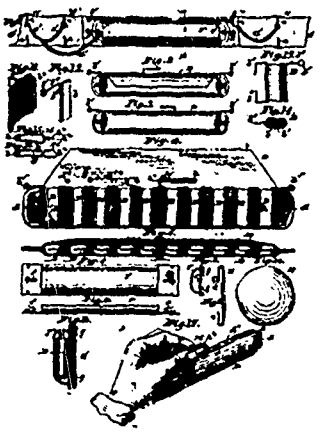
28187 Walters' Suspender Buckle.



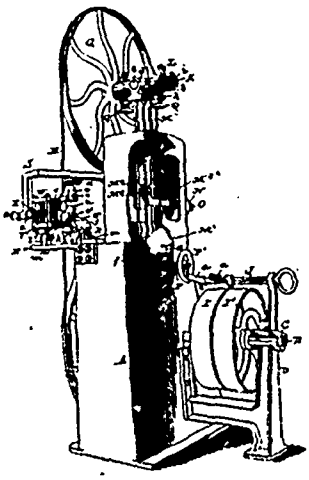
28188 Smead's Hot Air Furnace.



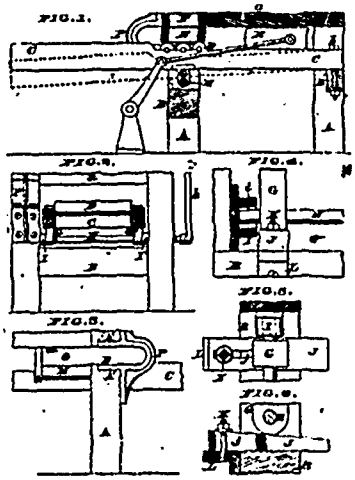
28189 Herbertz's Cupola.



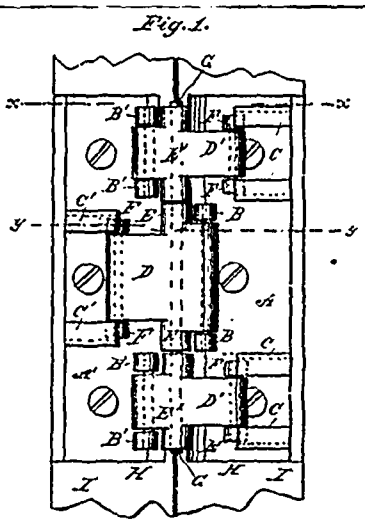
28190 Owen's Electric Belt.



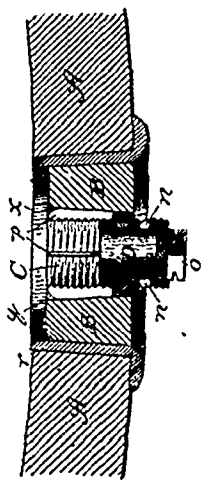
28191 Ballew's Machine for Sawing Barrel Hoops.



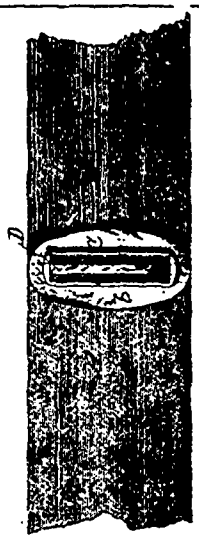
28192 Creager's Brick Machine.



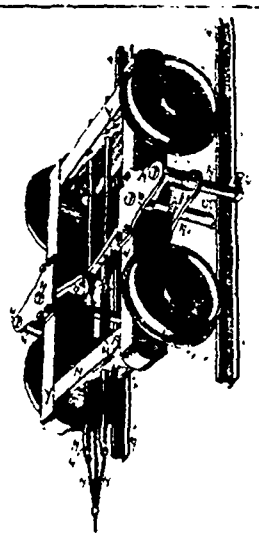
28193 Scheidemann & Bender's Hinge.



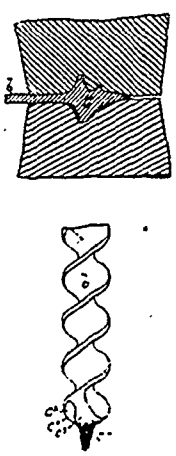
28194 Ayer's Vent and Stopper.



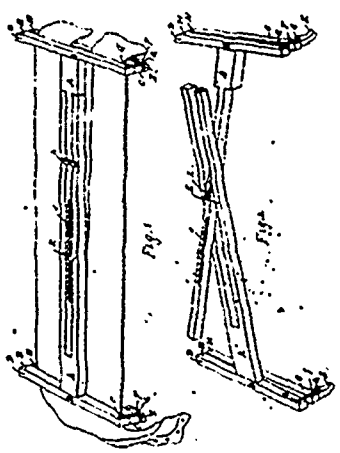
28195 Preston's Belt Fastener.



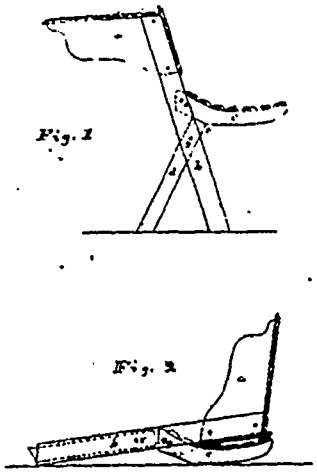
28196 Dunstan's Safety Catch.



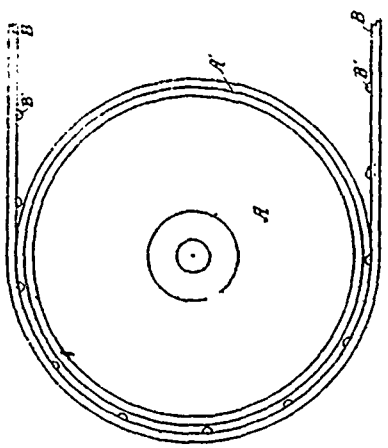
28197 Whitehouse's Twist Auger.



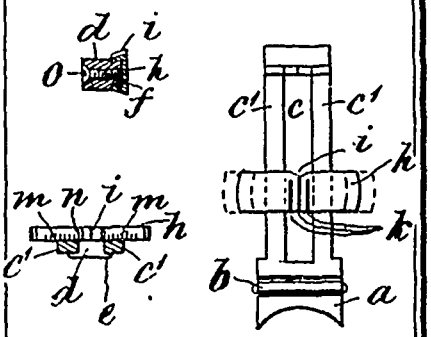
28198 Hall's Machine for Stretching Garments.



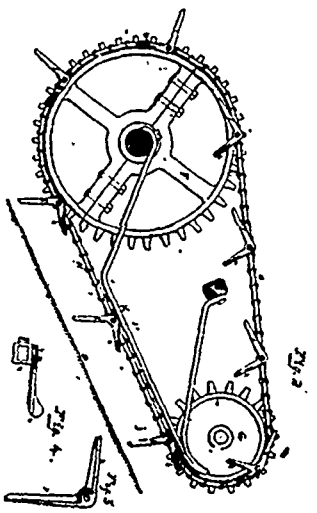
28199 Gillis' School Furniture.



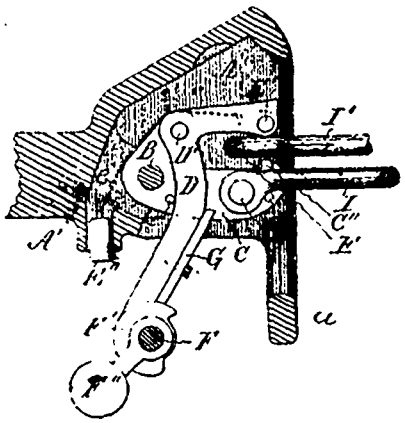
28200 Adamson's Belt for Transmitting Motion.



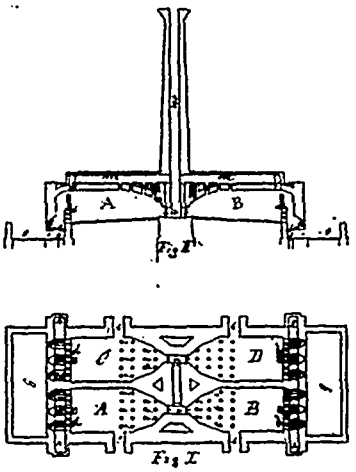
28201 Manton's Sight for Fire Arms.



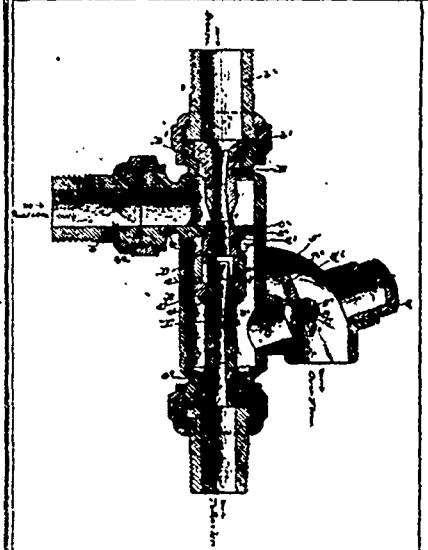
28202 Whiteley & Bayley's Grain Binder.



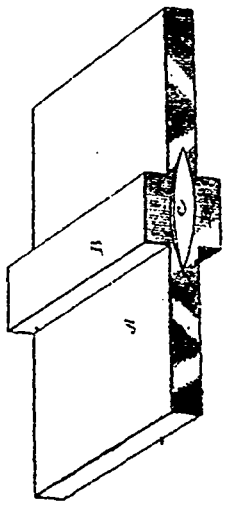
28203 Scott's Car Coupling.



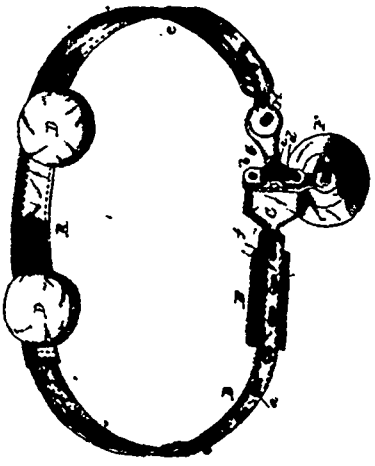
28204 Bleininger's Brick Kiln.



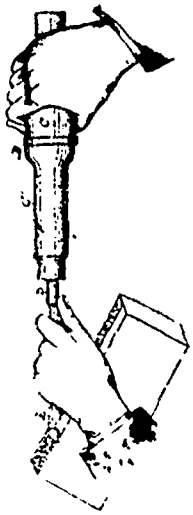
Desmoud's Steam Injector



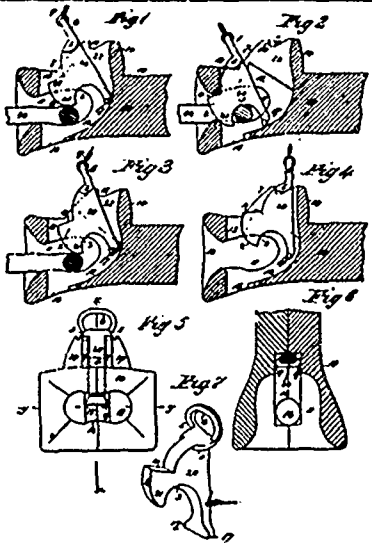
Keeler's Manuf'g of Shovel Blanks.



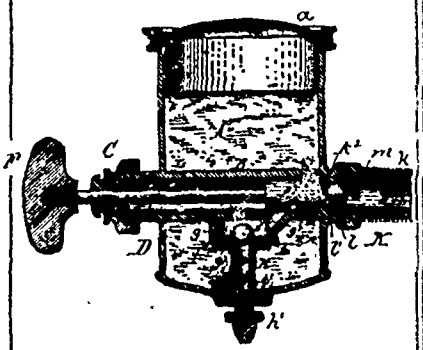
Simmons' Truss.



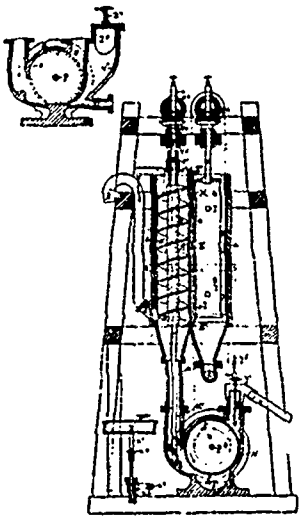
28209 McCoy's Method of Making Smooth Surfaces on Stone, etc.



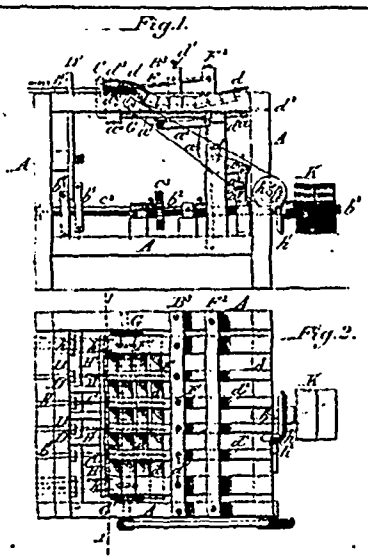
28210 McKitterick & Morgans' Car Coupler.



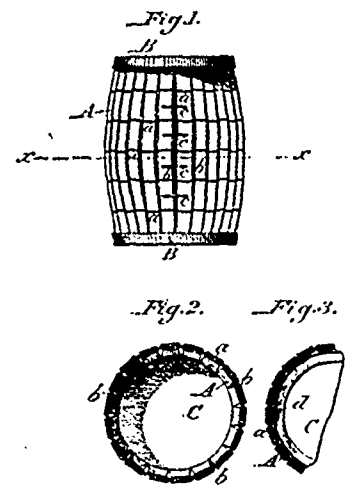
28211 Hirch's Oil Pump.



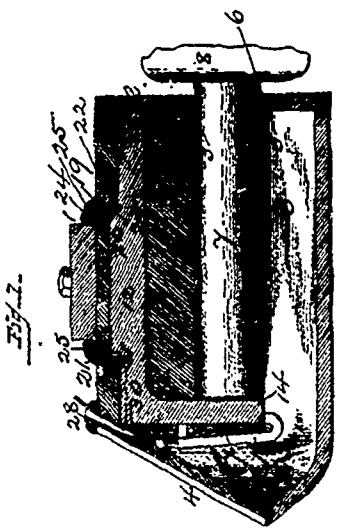
28212 Atkins' Apparatus for Separating Metals from Ores.



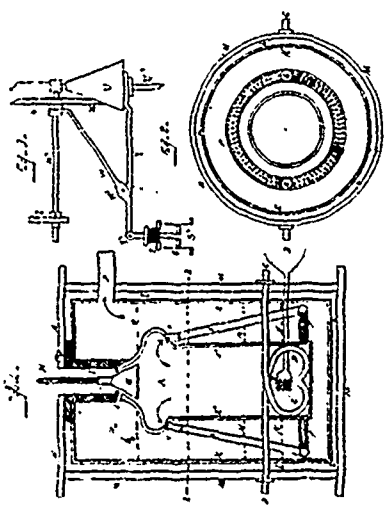
28213 Kerr's Slat Weaving Machine.



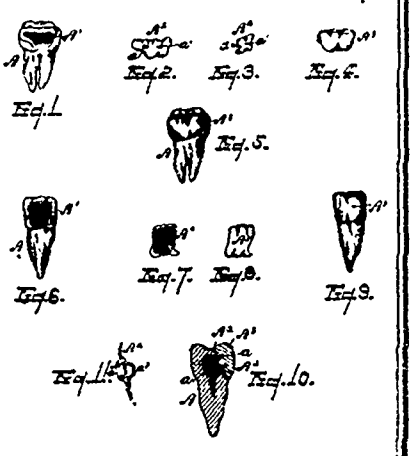
28214 Kerr's Ventilated Barrel, etc.



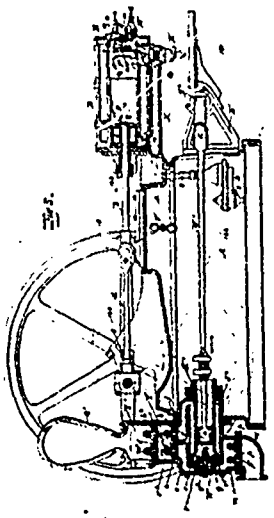
28215 Wyley's Car Axle Box.



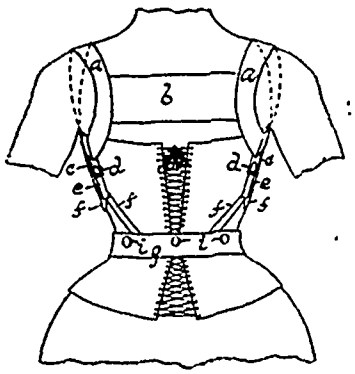
28216 Boyd's Steam Generator.



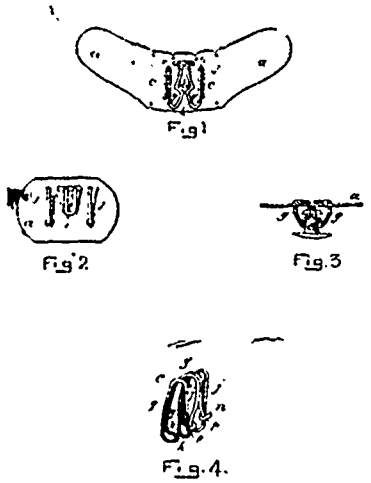
28217 Lund's Method of Filling Teeth.



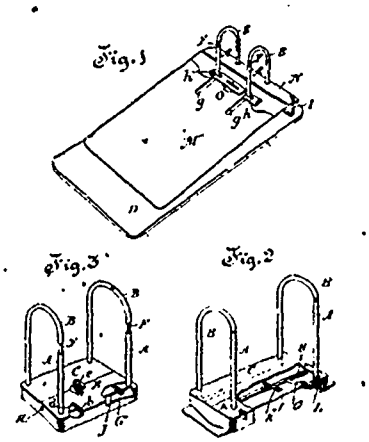
28218 Baldwin's Engine for Pumping Gas.



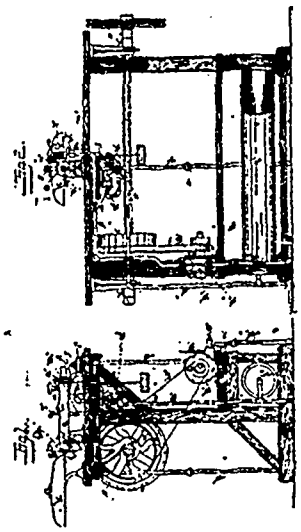
28219 Stewart's Brace and Skirt Support.



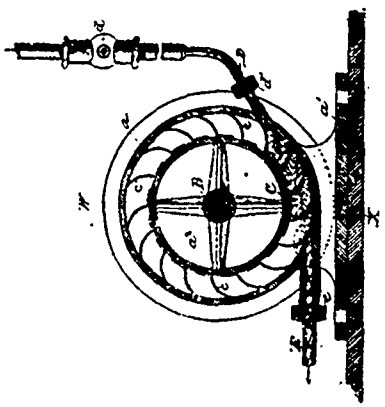
28220 Scully's Necktie Supporting Loop.



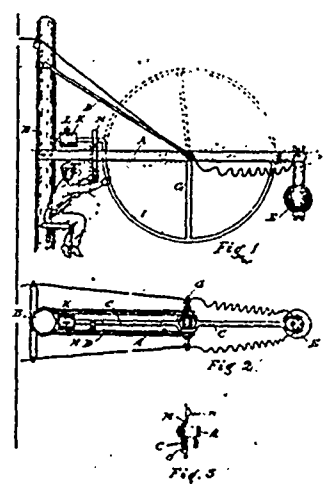
28221 Campbell's Paper File.



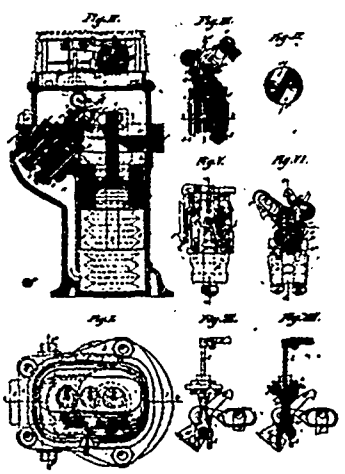
28222 Shaw's Apparatus for Testing Mine Gas.



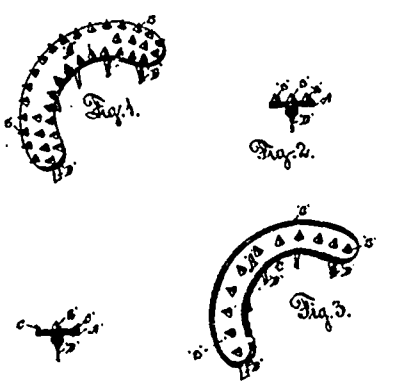
28223 Jones & Quilter's Means for Driving Machinery.



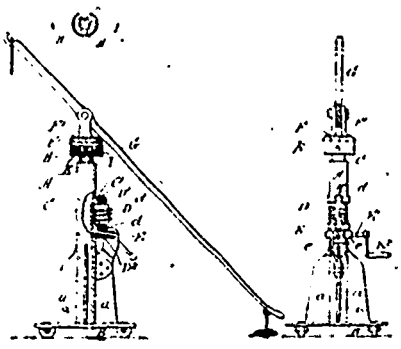
28224 Latour's Electric Lamp Support



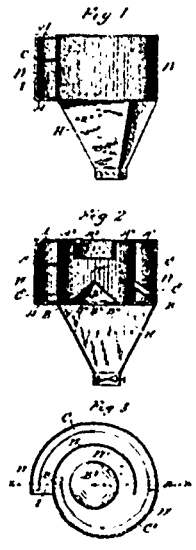
28225 Dieghen's Gas and Fluid Meter



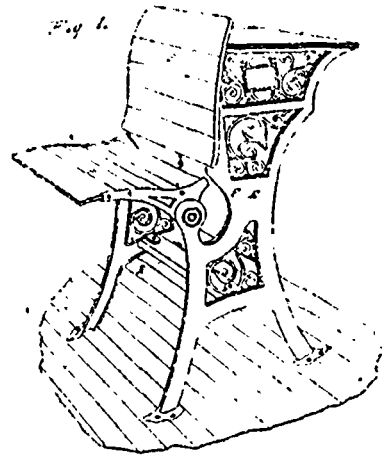
28226 Doney's Heel Plate Surface



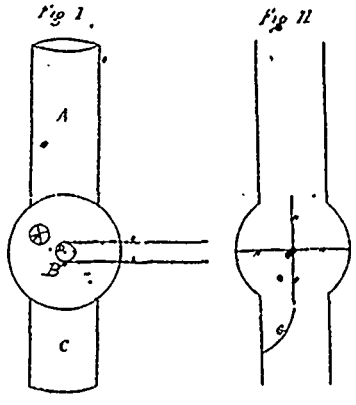
28227 Browne's Apparatus for Unloading and Filling Goods.



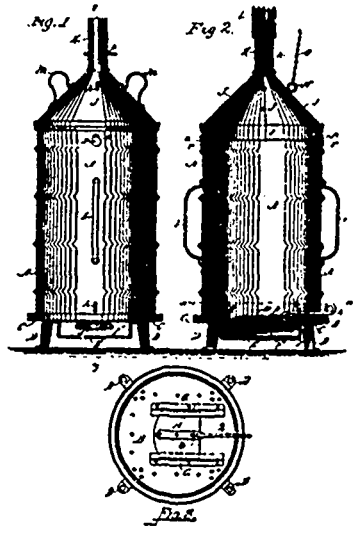
28228 Curtis' Dust Collector.



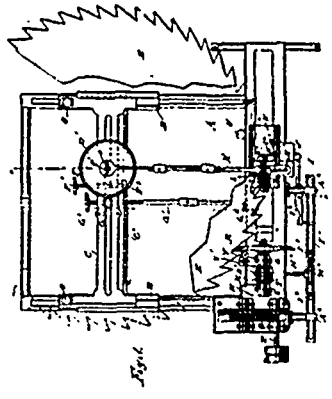
28229 Beal's Tension Joint for School Seats.



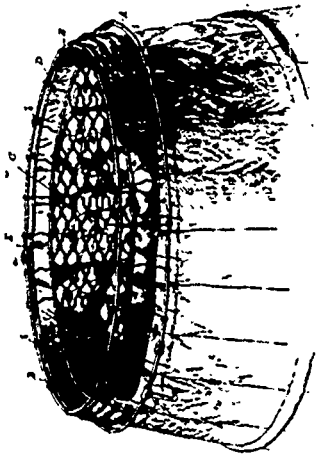
28230 Buchanan's Spark Arrester.



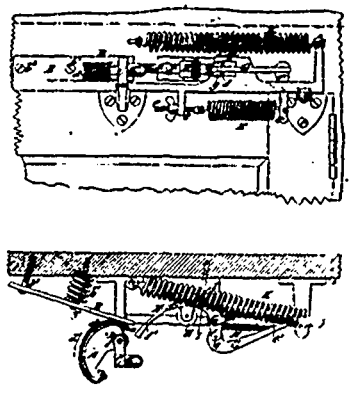
28231 Smith's Straw Burning Stove.



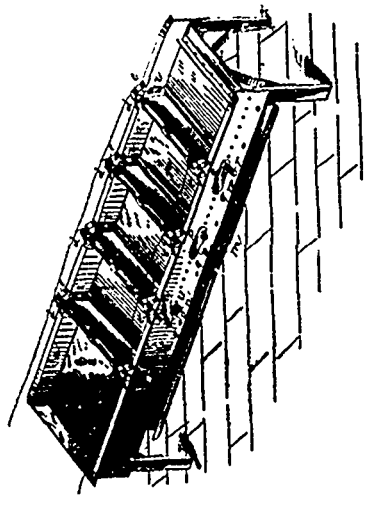
28232 Gaskin's Rotary Saw Sharpener.



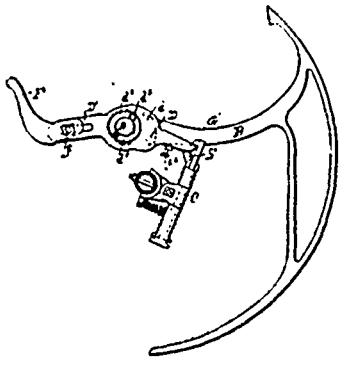
28233 Moosburgger's Cover for Barrels, etc.



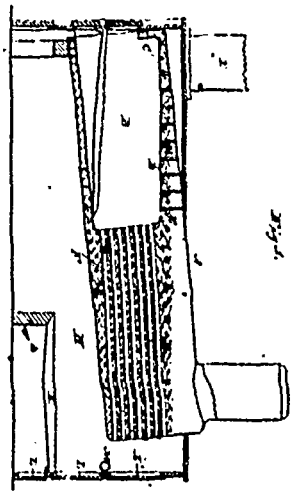
28234 Wittle's Door Check.



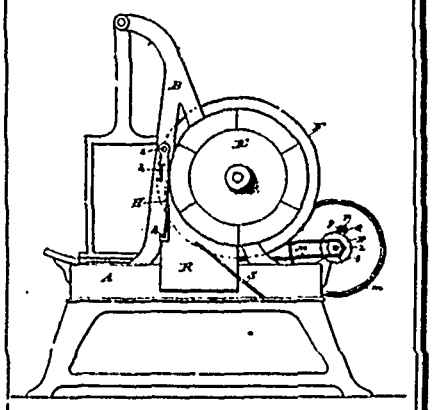
28235 Wiswell's Amalgamating Table.



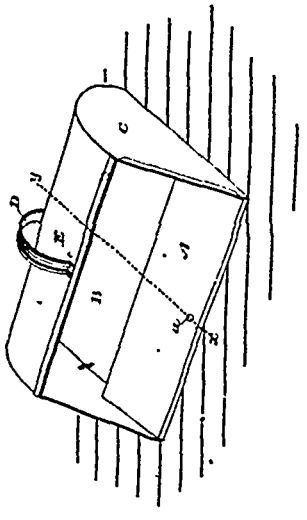
28236 Bullock's Trip Mechanism for Grain Binders.



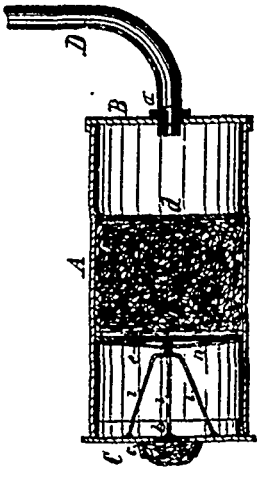
28237 Mumford's Steam Boiler.



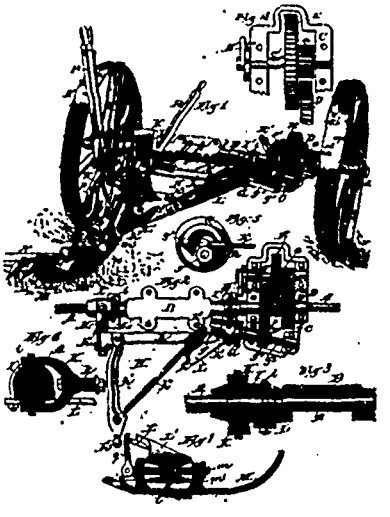
28238 Mumford's Shingle Sawing Machine.



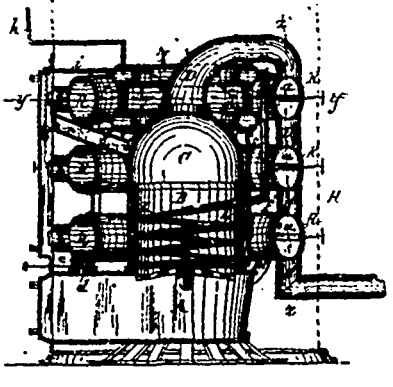
28239 Booth's Dust Pan



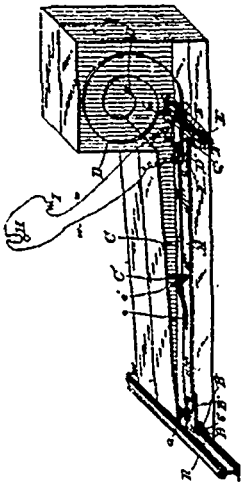
28240 Revoir's Pump Filter.



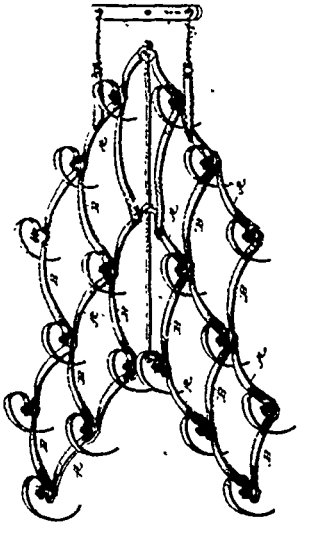
28241 Violet's Mower.



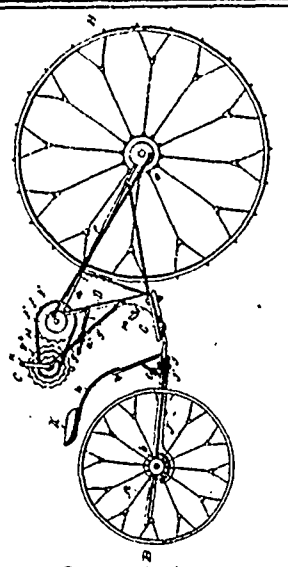
28242 Howard's Steam Heater and Hot Air Furnace.



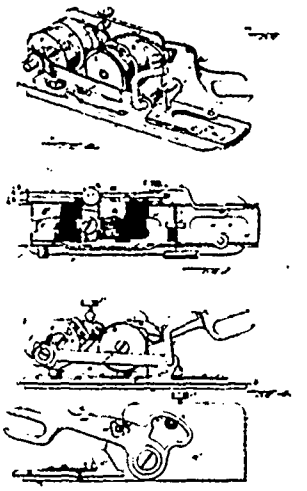
28243 Street's Railway Signal.



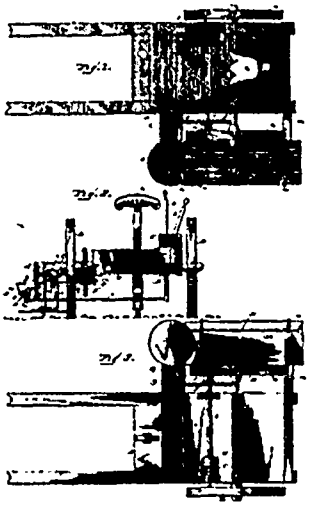
28244 Stevens' Harrow.



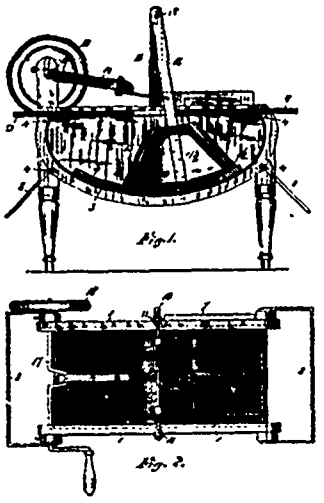
28245 Bayer's Tricycle.



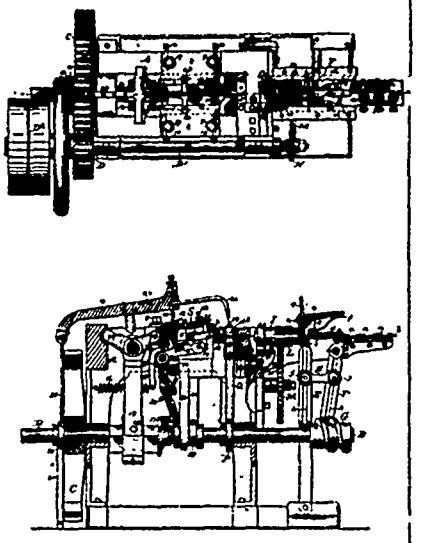
28246 Wesley's Attachment for Sewing Machines



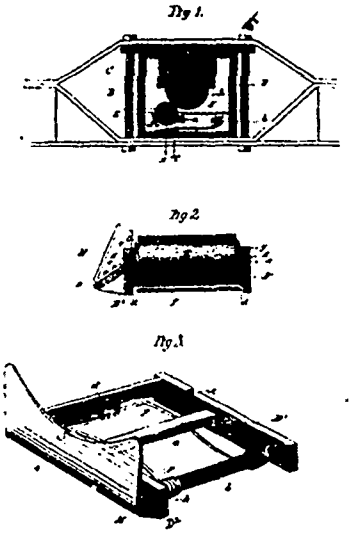
28247 Albertson's Corn and Cane Cutter.



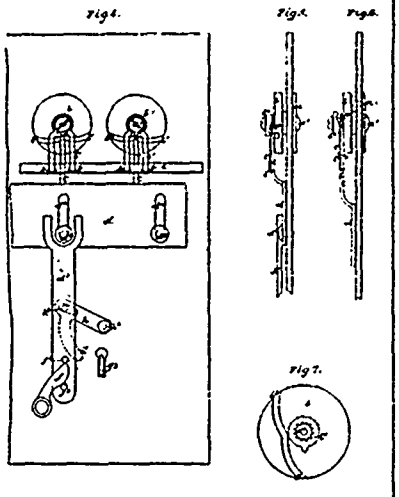
28248 Mirfield's Washing Machine.



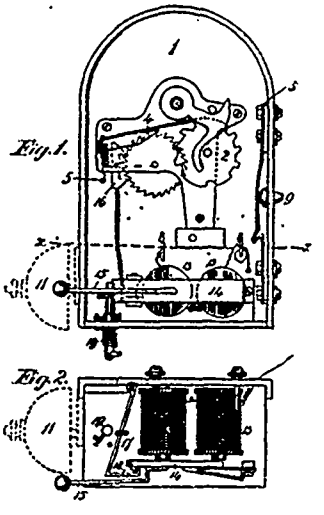
28249 Jones' Metal Screw Machine.



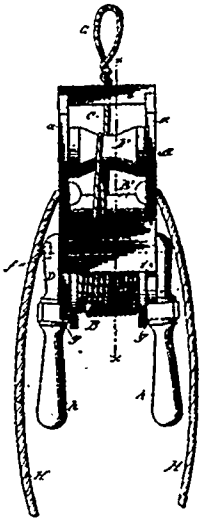
28250 Paas' Car Axle Lubricator.



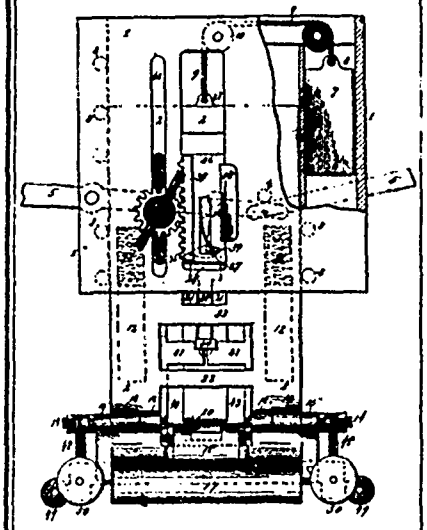
28251 Munro's Apparatus for Preventing the Fraudulent opening of Safes.



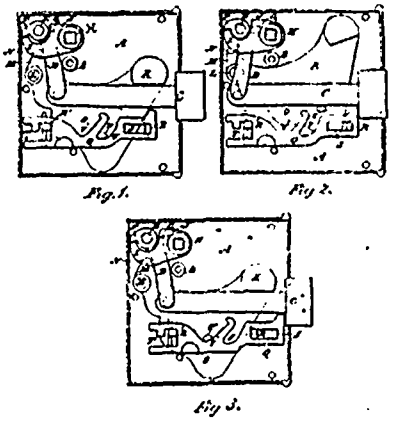
28252 Wright's Electric Call.



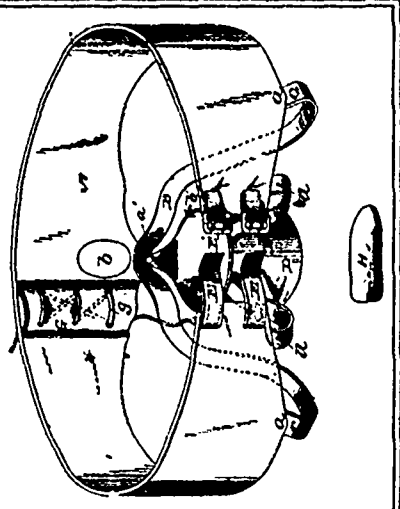
28253 Matthie's Fire Escape.



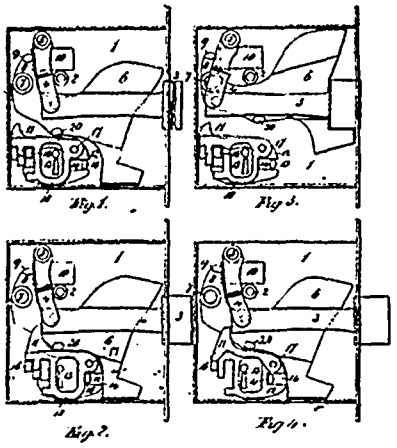
28254 Terry's Grip for Cable Roads.



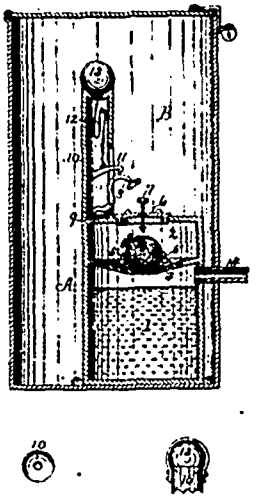
28255 Craig's Latch and Lock.



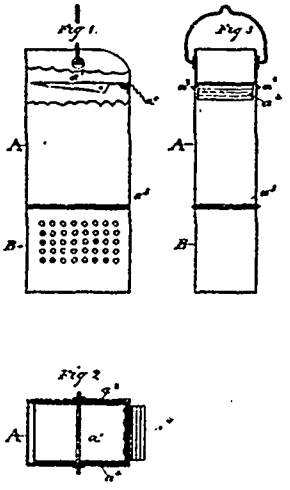
28256 Patten's Truss.



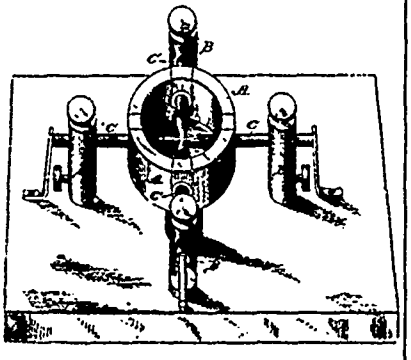
28257 Craig's Latch and Lock.



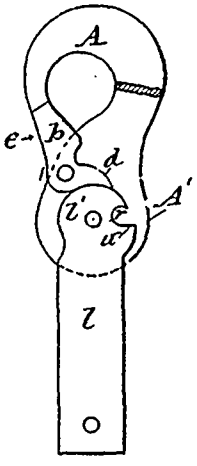
28258 Swallow & Keeny's Fire Extinguisher.



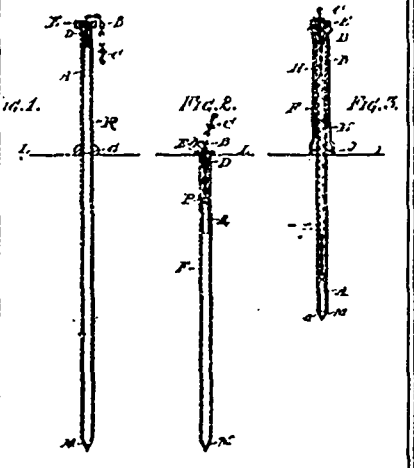
28259 Peay's Well Cleaner.



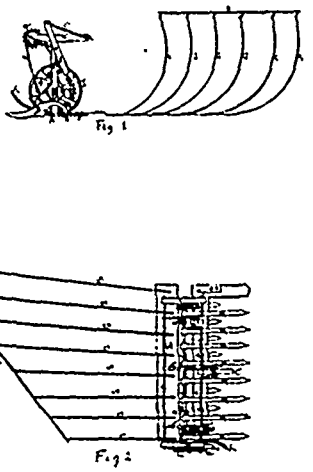
28260 Wheeler's Incandescent Electric Lamp



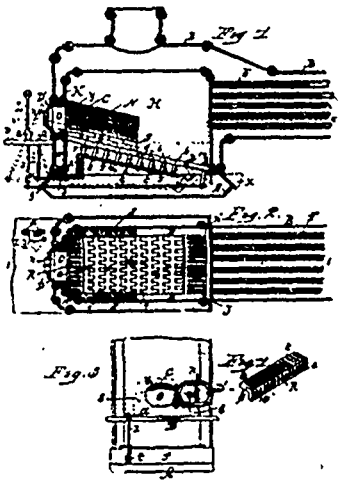
28261 Sears & Kelley's Snap Hook.



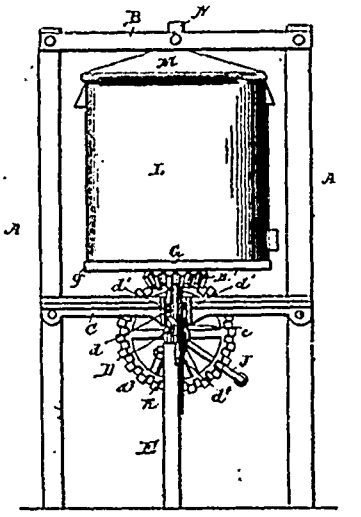
28262 Wright's Hitching Post.



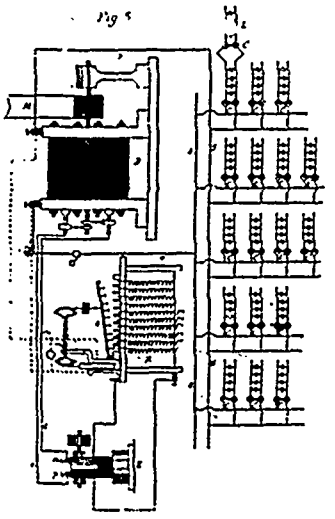
28263 Fox's Pea Harvester.



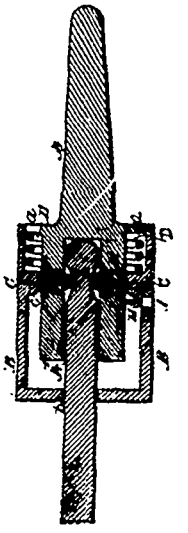
28264 Backus' Boiler Furnace.



28265 Backster & Reiff's Churn.



28265 Gaulard's System of Electric Distribution.



28267 Larger's Drill Chuck.

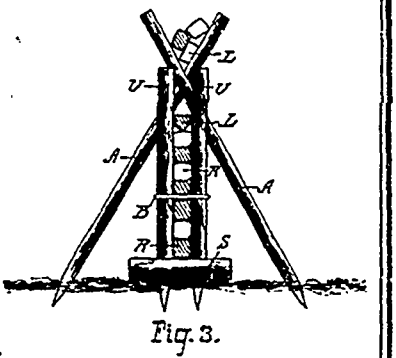
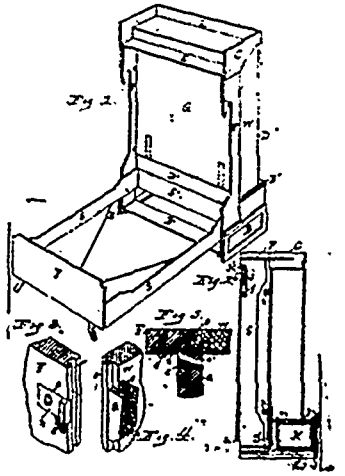
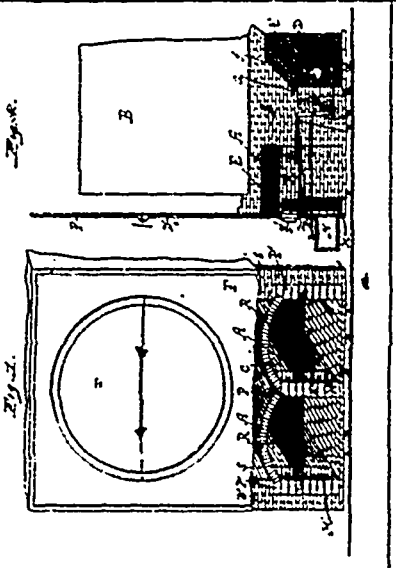


Fig. 3.

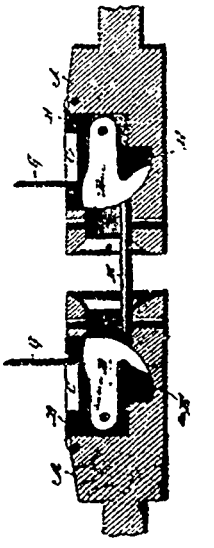
28268 Walker's Fence.



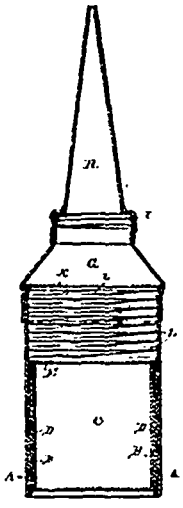
28269 Lockrow's Folding Bed and Wardrobe



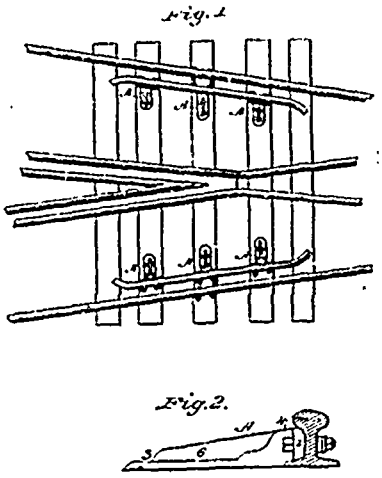
28270 Backus' Smokeless Steam Generator.



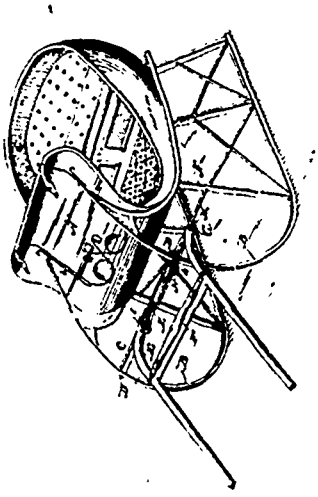
28271 Bailey's Car-Coupling.



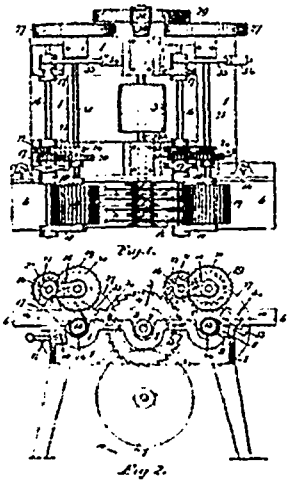
28272 Hunton's Oil Can.



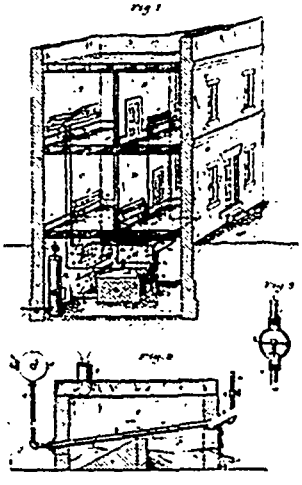
28273 Waterman & Gray's Railway Rail Bracket.



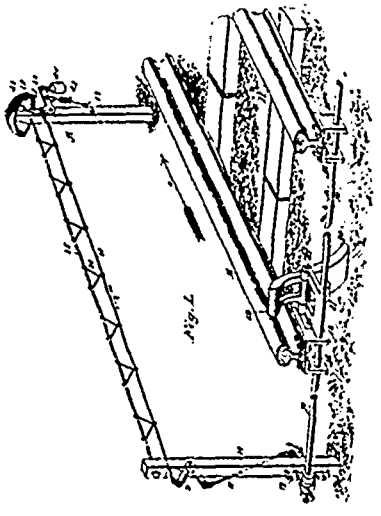
28274 Askin's Shifting Thill-Coupling.



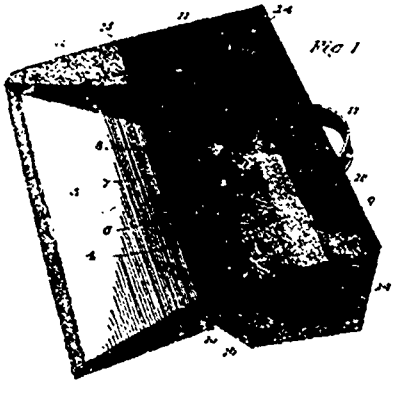
28275 Manley's Lath Bolt and Picket Sawing Machine.



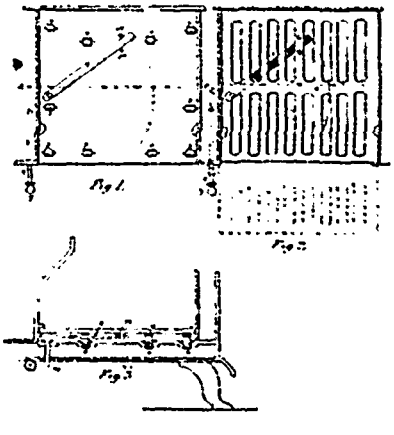
28276 Gates' Heating Apparatus.



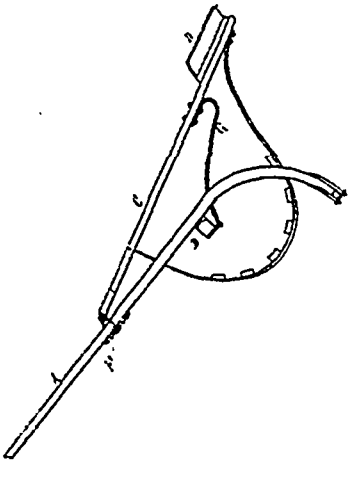
28277 Rathmann's Signal for Railway Crossings.



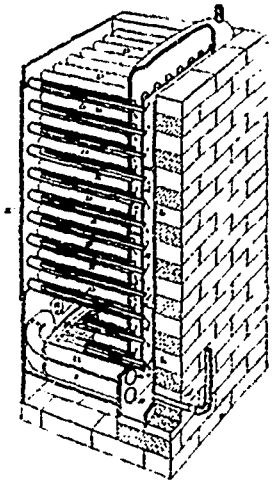
Hemenway's Dust Pan.



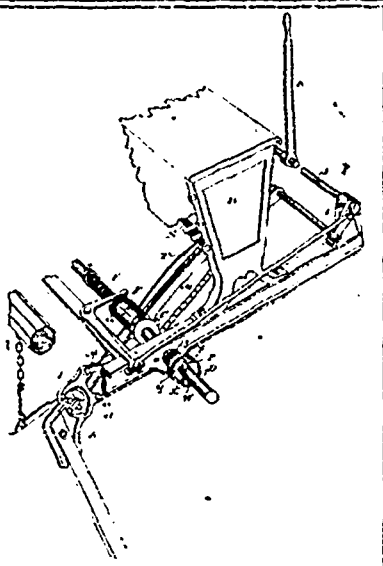
28278 Gentle's Stove Oven.



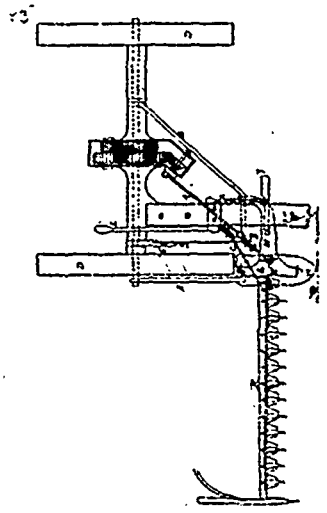
28279 Mumbrue's Road Cart.



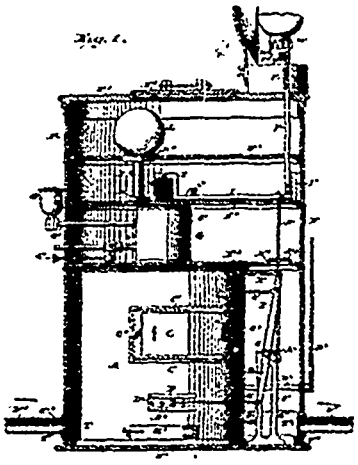
28281 Kirkwood's Water Heater.



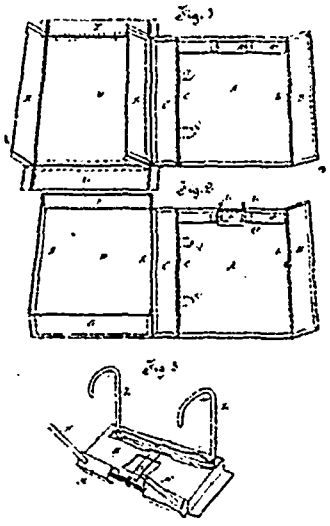
28282 Hamilton's Seeding Machine.



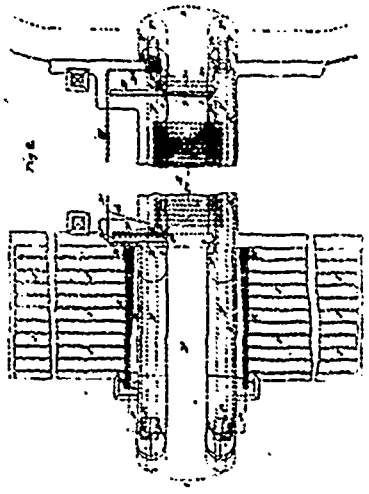
28283 Bartlett's Mowing Machine.



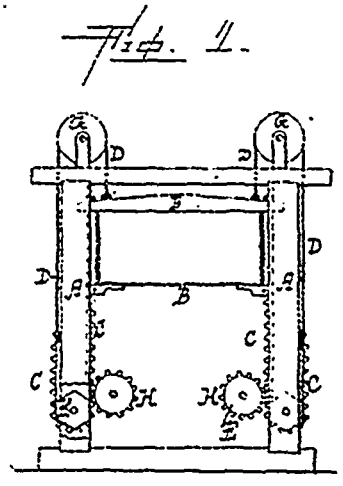
28284 Tyler's Car Heater.



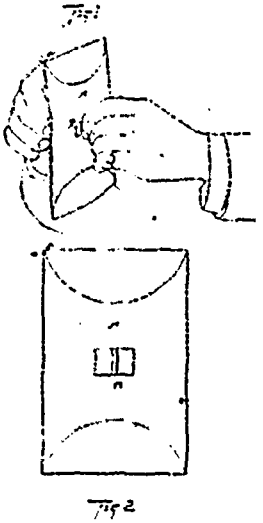
28285 Campbell's Binding Case.



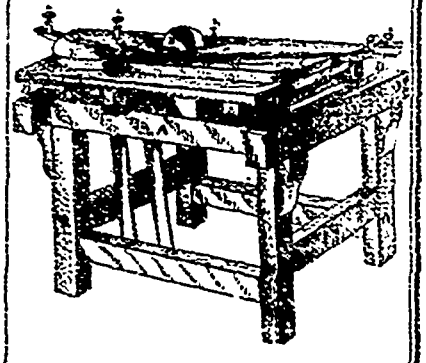
28286 Blackman's Canal Lock.



28287 Crispin's Elevator.

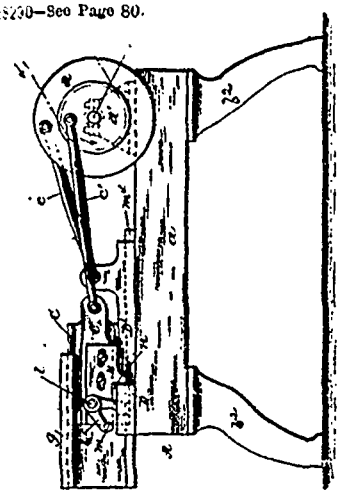


28255 Ernst's Bellows-Package for Distributing Powder.

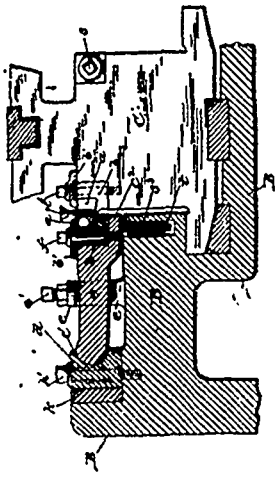


28288 Roy's Radial Sawing Machine.

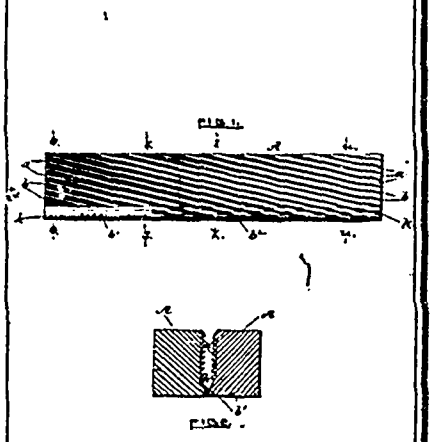
28290—See Page 80.



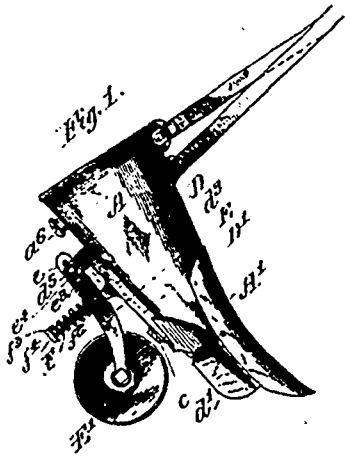
28291 Rogers' Device for Holding and Guiding Screw Blanks.



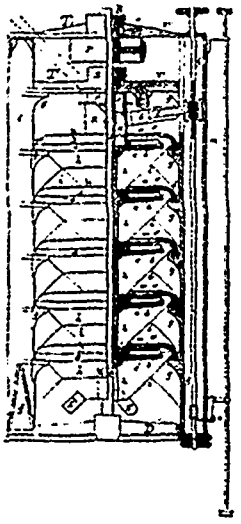
28292 Rogers' Die for Screw-Making Machines.



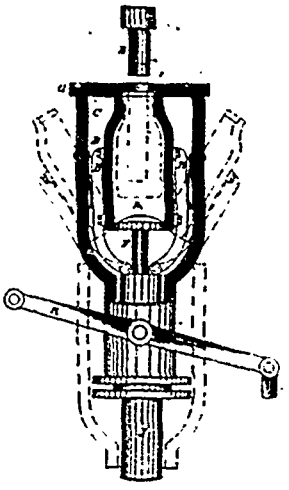
29293 Rogers' Method of Screw threading Wood Screws.



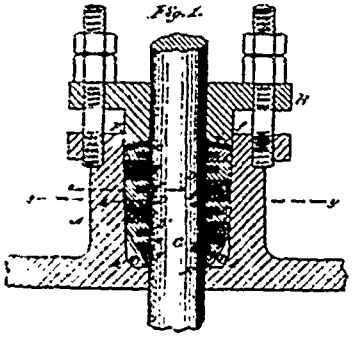
28294 Keller's Seeding Boot.



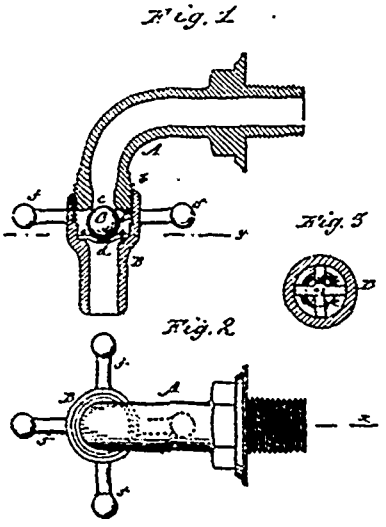
28295 Buchholz's Machine for Cleaning Grain, etc.



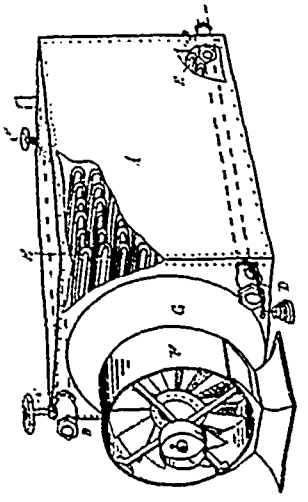
28296 Ashley's Manufacture of Bottles, etc.



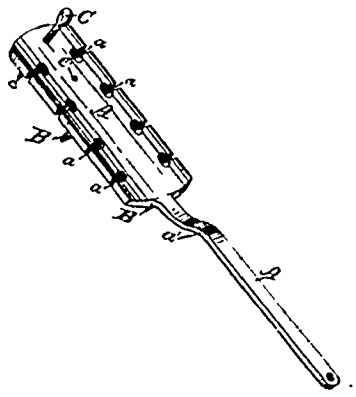
28297 Brockett's Metallic Packing



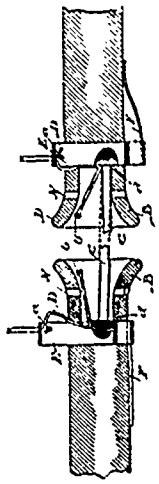
28298 Aldrich's Faucet



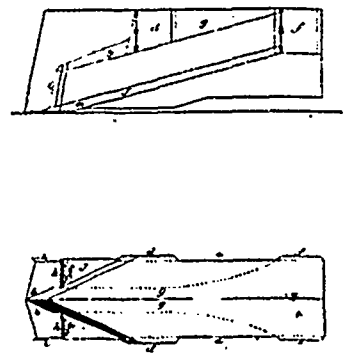
28299 Smith's Heating Apparatus.



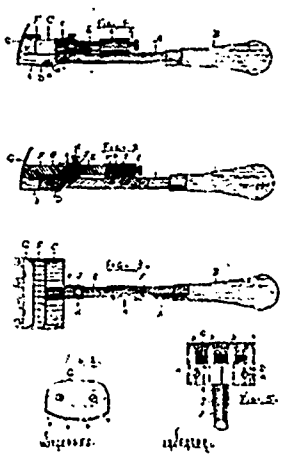
28300 McGregor's Saw-set and Gauge.



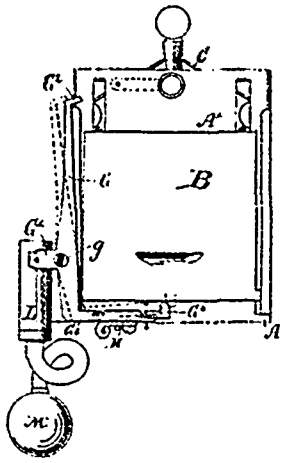
28301 Haugh's Car-Coupling.



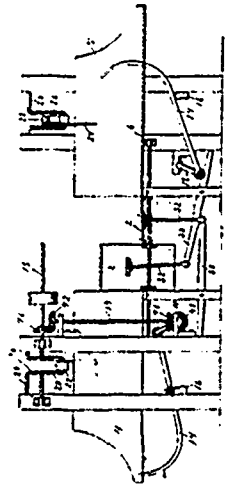
28302 Payne's Snow Plough.



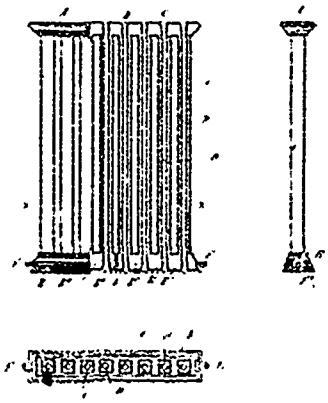
28303 Little's Veterinary Lancet.



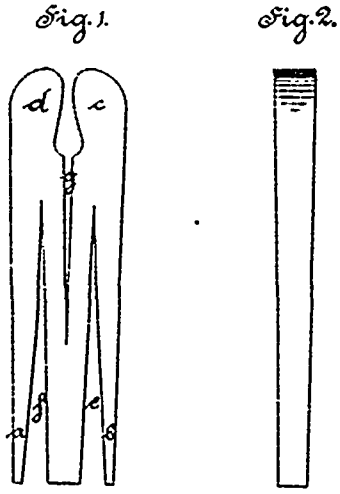
28304 Durnford's Photographic Shutter.



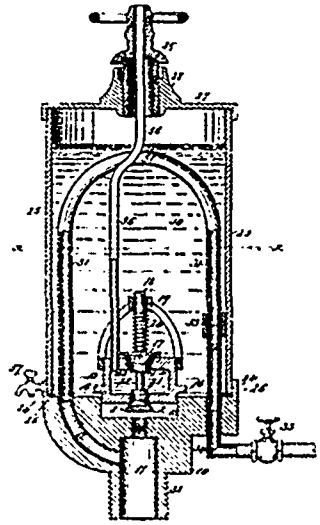
28305 McVeety's Feeding Mechanism for Threshing Machine.



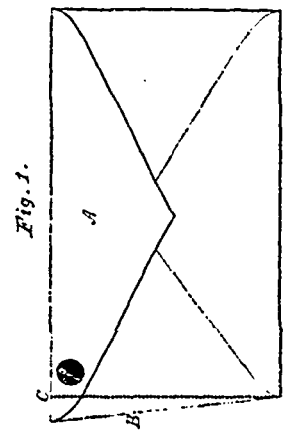
28306 Bennell's Sectional Radiator.



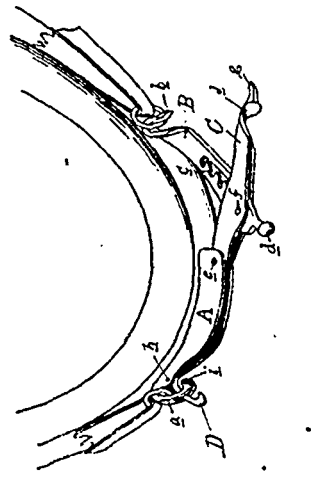
28307 Buttermilch's Clothes Peg.



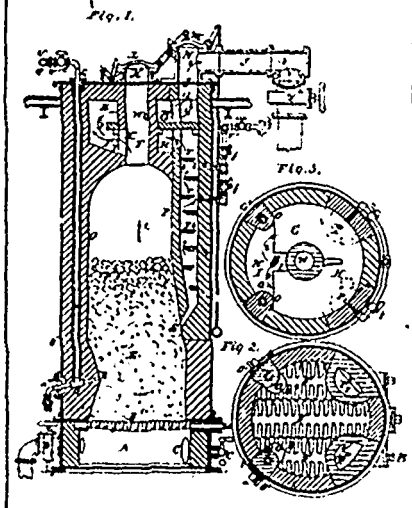
28308 Brownlow's Lubricator



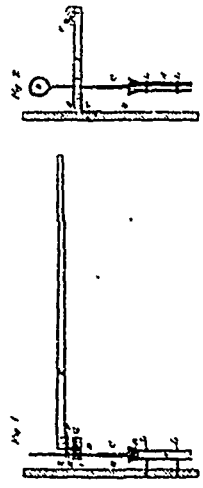
28310 Detweiler & Staebler's Envelope



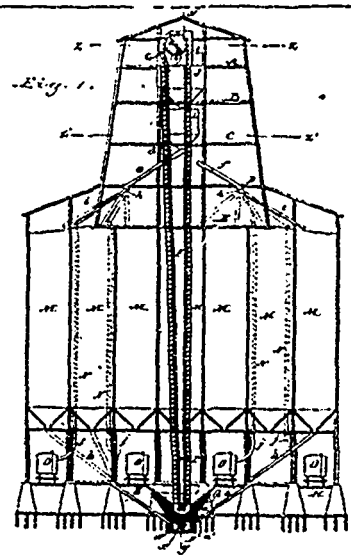
28311 Everett's Metallic Hame Fastener.



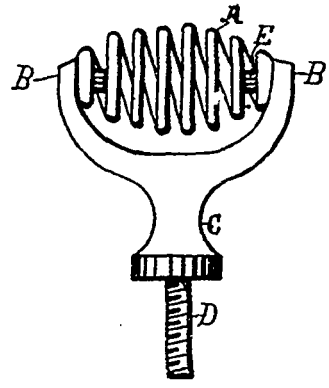
28312 Bocklen's Apparatus for Manufacturing Illuminating and Heating Gas.



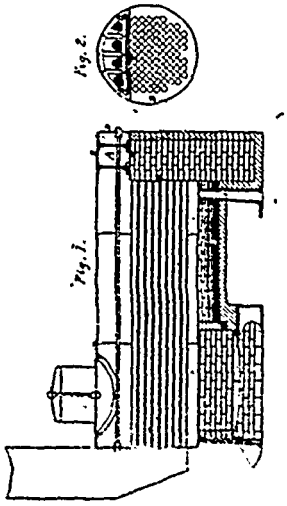
28313 Gerred's Regulating of Heat in the Process of Raising Poultry Artificially.



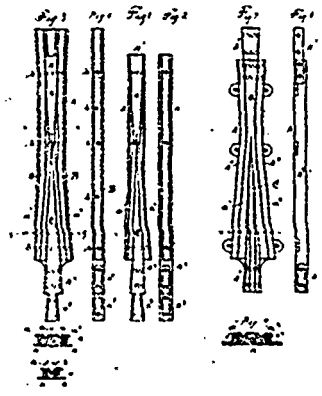
28314 McLennan's Grain Elevator.



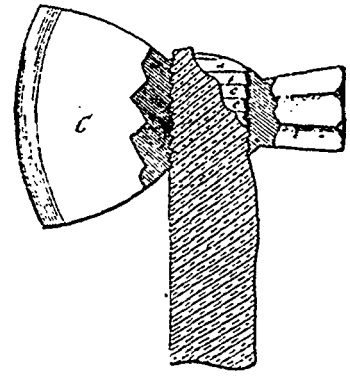
28315 Gaitley's Handle.



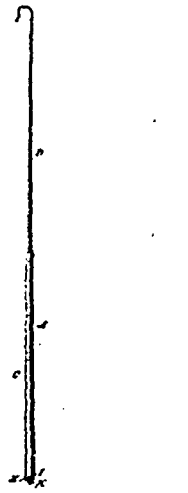
28316 Gray's Steam Boiler.



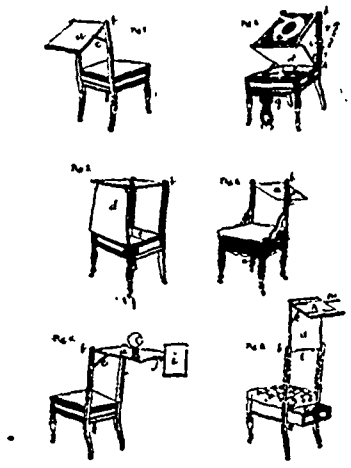
28317 Chance's Railway Frog



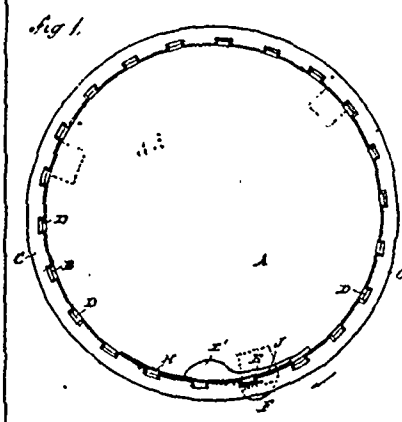
28318 Hawley's Ferrule, etc.



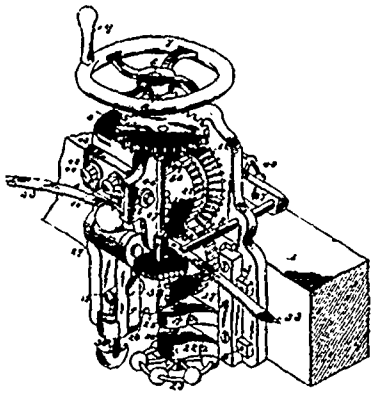
28319 Godward's Whip and Cane.



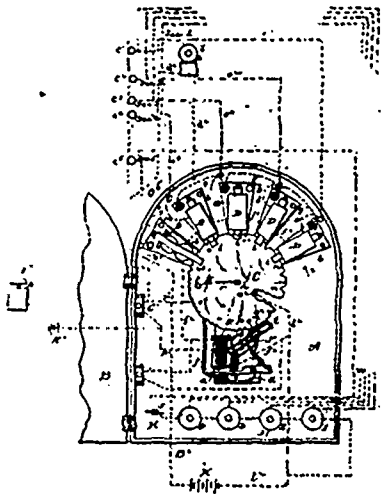
28320 Powell's Chair, Desk and Table.



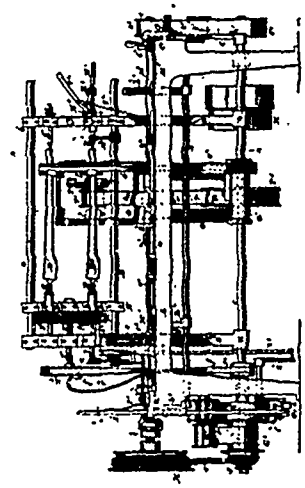
28321 Stone & Dundas' Device for Sorting Horse shoe Nails.



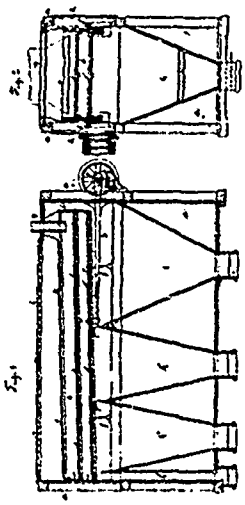
28322 Ballew's Saw-Set.



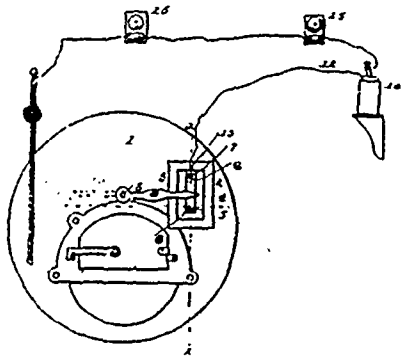
28323 Frost's Alarm Signal.



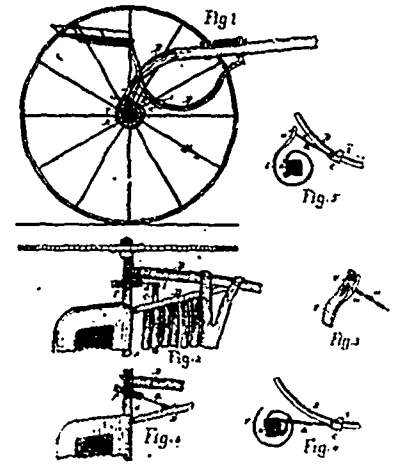
28324 Hoopes' Machine for Turning Irregular Forms.



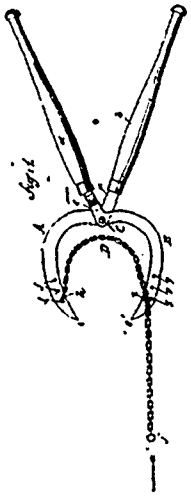
28325 Weiss & Frankel's Middlings Purifier.



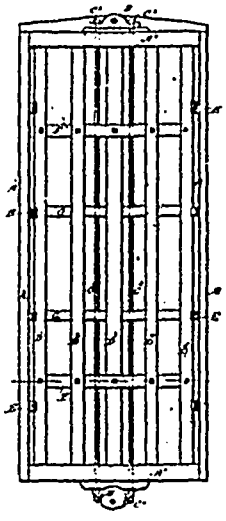
28326 Olson's Water Level Alarm.



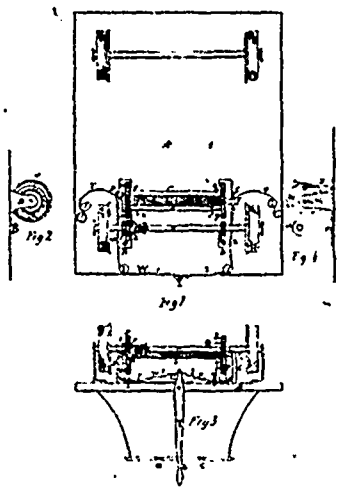
28327 Healy's Two-Wheeled Vehicle.



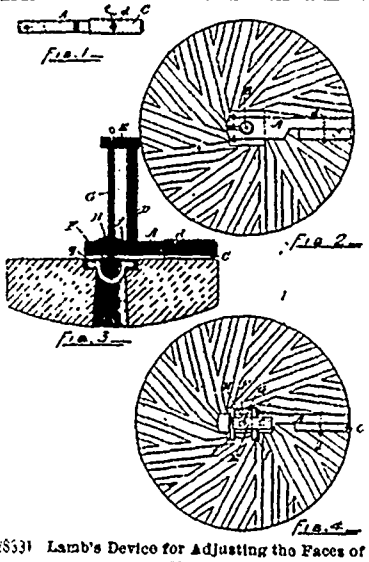
28328 Maxim's Brush Extractor.



28329 Matthews' Locomotive Tender Frame.

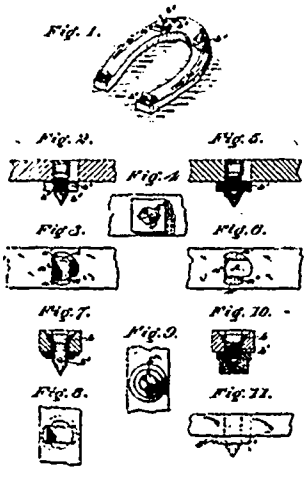


28330 Knowlton's Car.

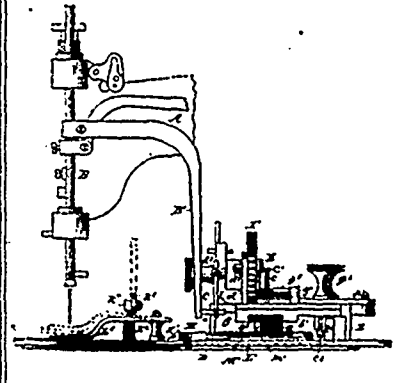


28331 Lamb's Device for Adjusting the Faces of Millstones.

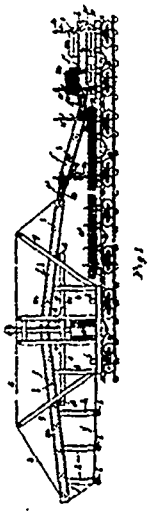
28332 Foote's Victor Tip and Holder.



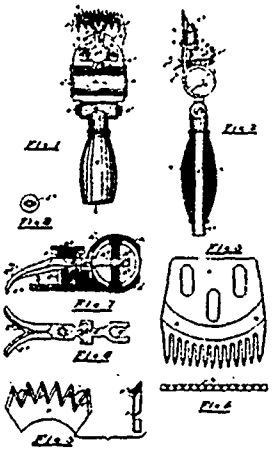
28333 Spencer's Horse Shoe.



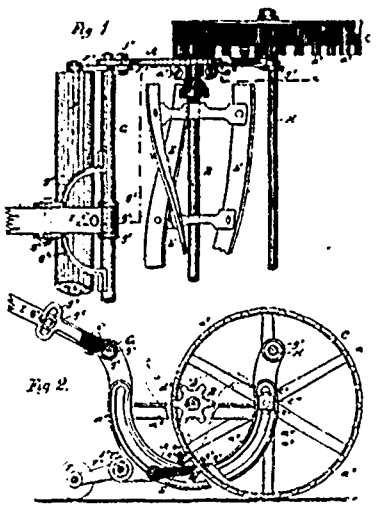
28334 Schott's Button-Hole Attachment for Sewing Machines.



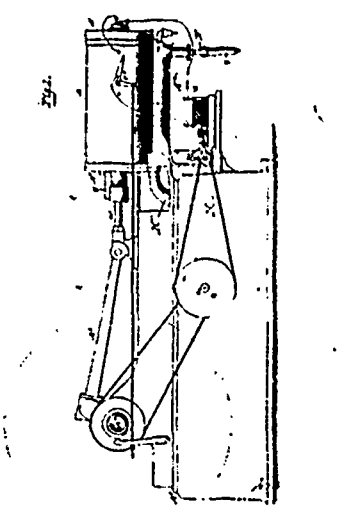
28335 Moore's Machine for laying Railway Tracks.



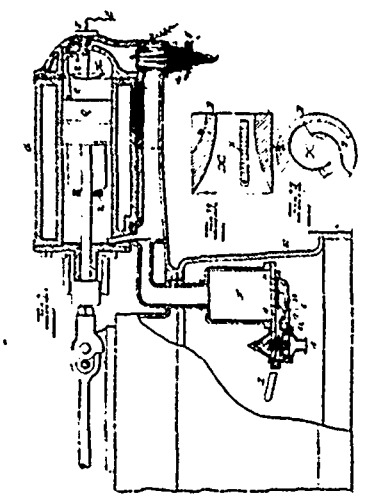
28336 Bell et al's Animal Shears, etc.



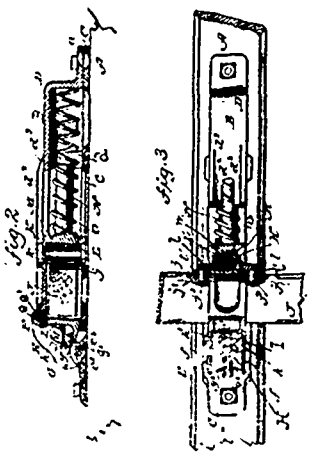
28337 Rogers' Lawn Mower



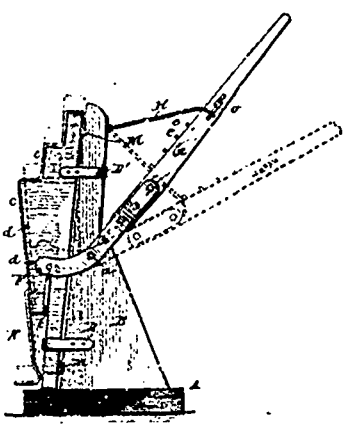
28338 Baldwin's Gas Engine.



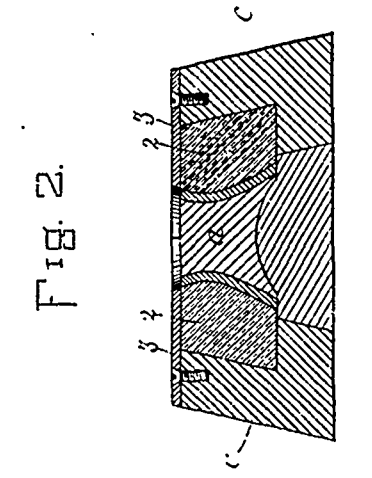
28339 Baldwin's Gas Engine.



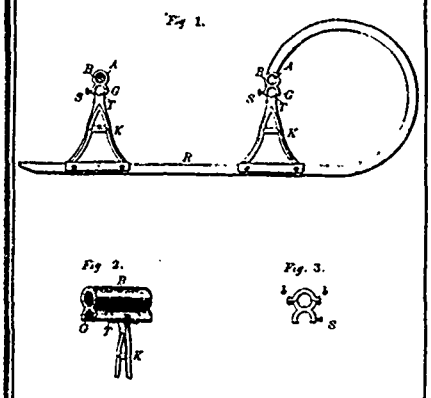
28340 Currey's Whiffletree Spring and Draft Equalizer.



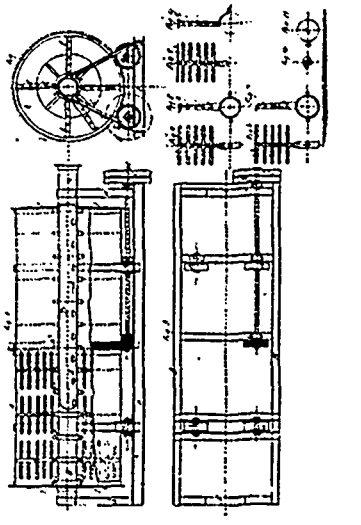
28341 Stiveson's Waggon Jack.



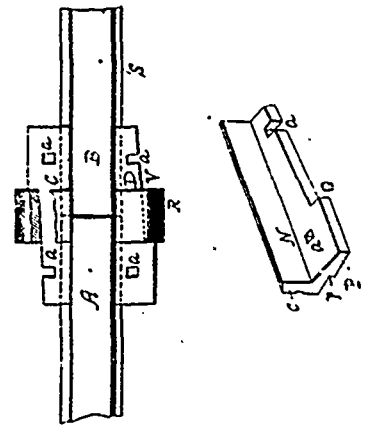
28342 Mitchell's Heel Mould.



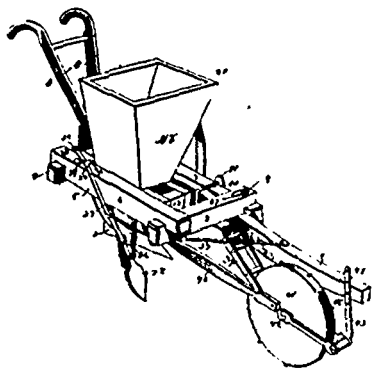
28343 Frey's Adjustable Sled Runner



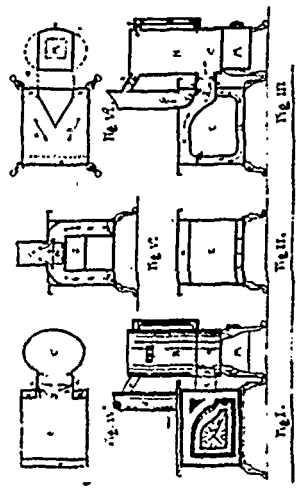
28344 Robinson's Apparatus for Drying Glutinous and other Materials.



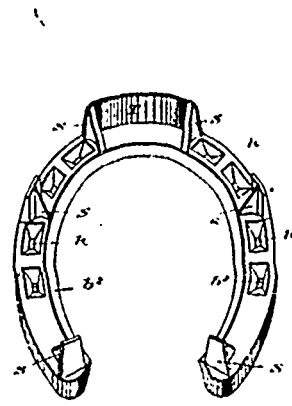
28345 Doran's Railway Track and Rail.



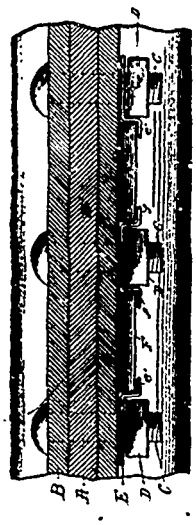
28346 Cumming's Planting Attachment.



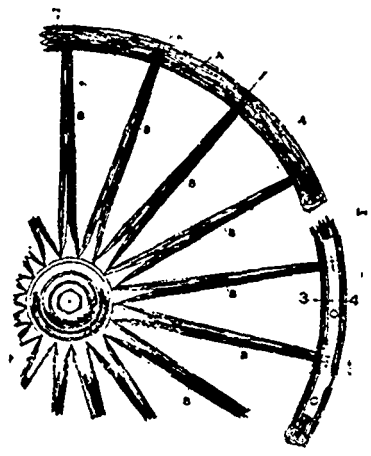
28347 McBride's Stove and Straw Burner.



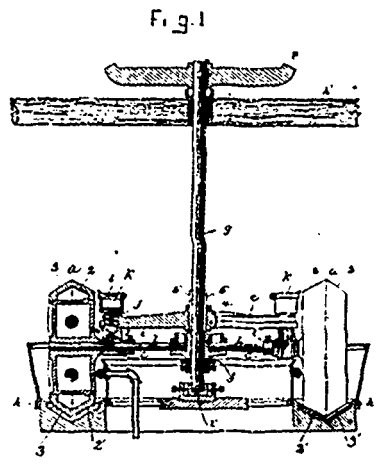
28348 White's Horse Shoe.



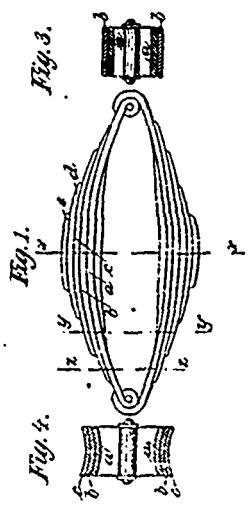
28349 Steiner's Nut-Lock.



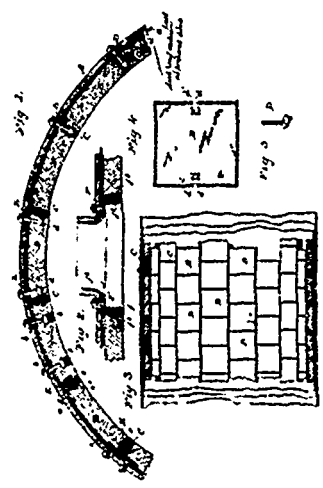
28350 Groom's Wheel.



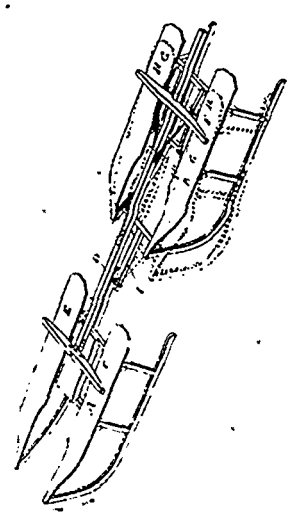
28351 Wiswell's Ore-Crushing Machine.



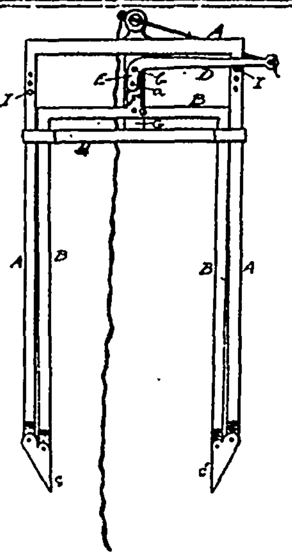
28352 Twist's Vehicle Spring



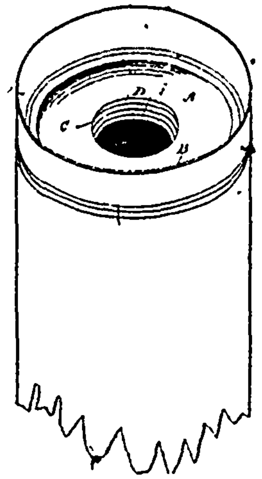
28353 Wagg's Paper Pulp Digester.



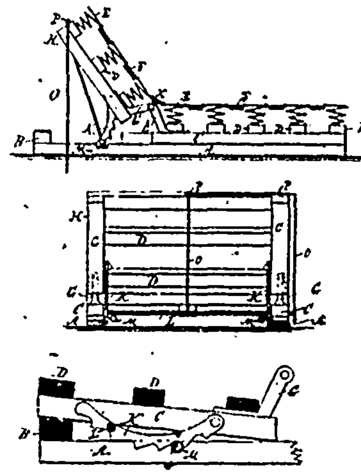
28354 Bain's Bob-Sleigh.



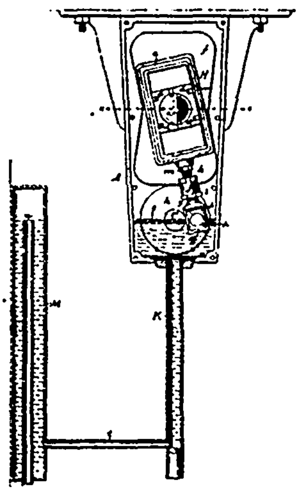
28356 Buchanan & Mathieson's Hay Fork.



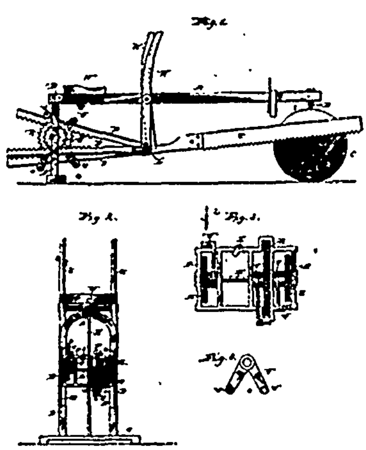
28357 Welch's Milk Can Cover.



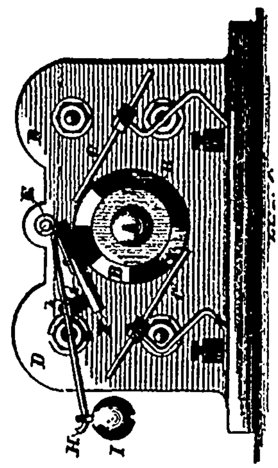
28358 Nutt's Invalid Bed.



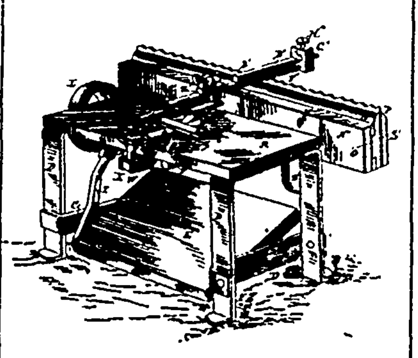
28359 Case's Steam or Water Motor.



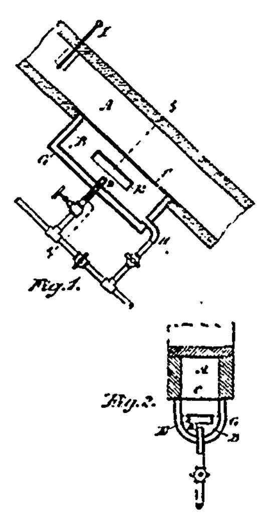
28360 Reichert's Drag Saw.



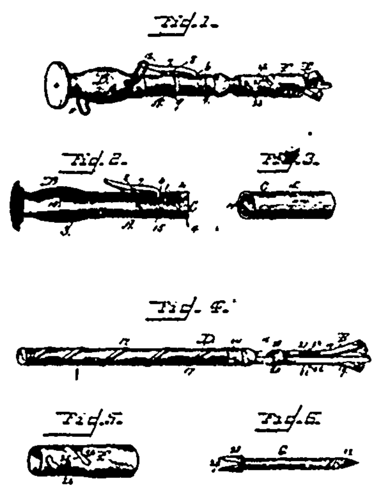
28361 Snowberger's Oiler and Wiper for Commutators.



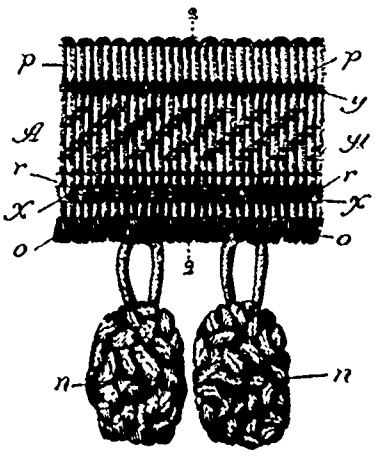
28362 Richmond's Machine for Filing Saws.



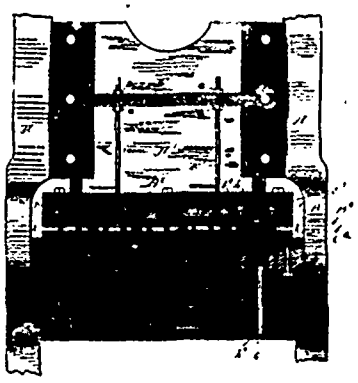
28363 Powell's Apparatus for Milling.



28364 Sellers' Screw-Driver.

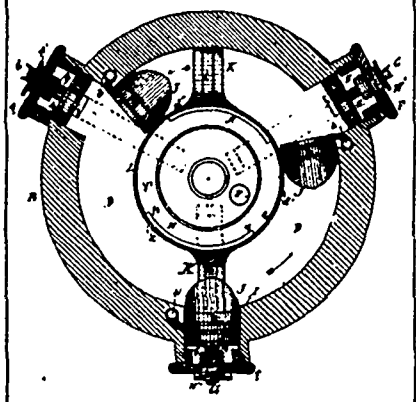


28365 Stevenson's Heading for Window Shades.

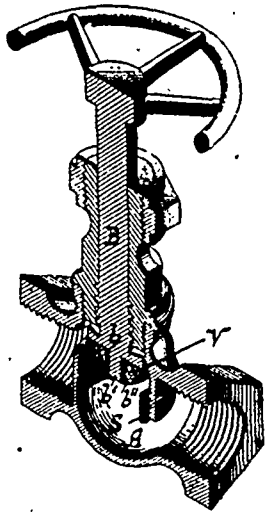


28367 Hodgson's Gang Die Press.

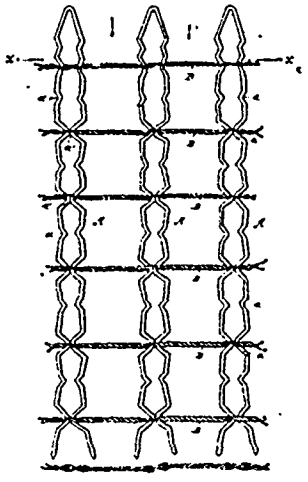
Fig 2.



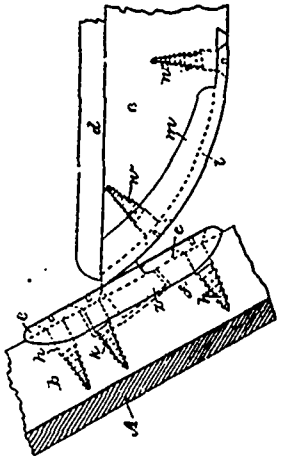
28368 Broughton's Rotary Engine.



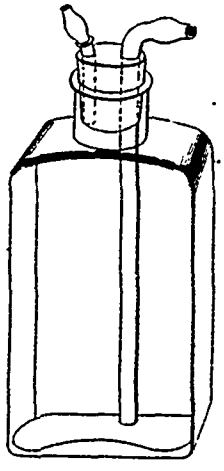
28369 Traylor's Valve, Valve Seat, etc.



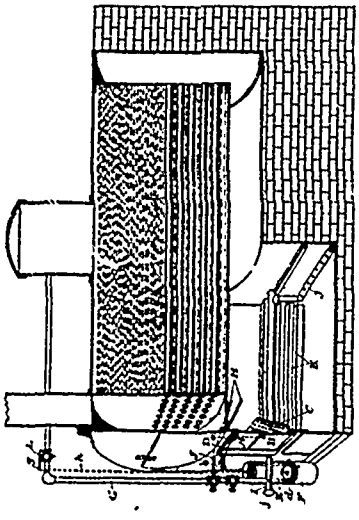
28370 Shellaberger's Picket Fence.



28371 Bailey's Sleigh.



28372 Foote's Inhaler



28373 Ellis' Furnace for Steam Boilers.

Fig 1.

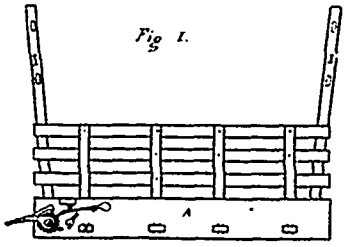
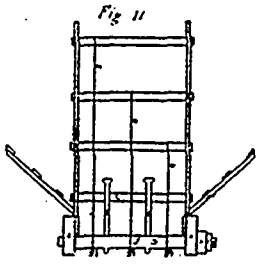
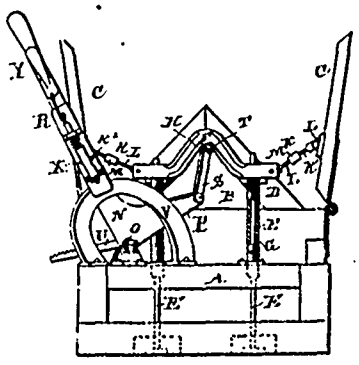


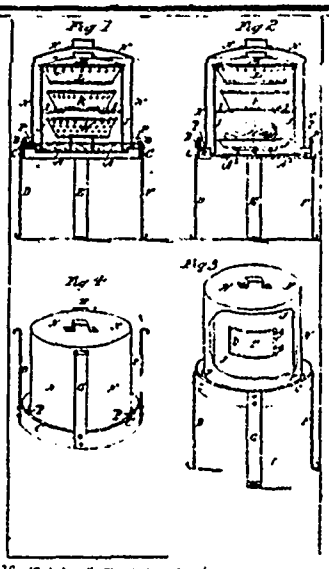
Fig 11



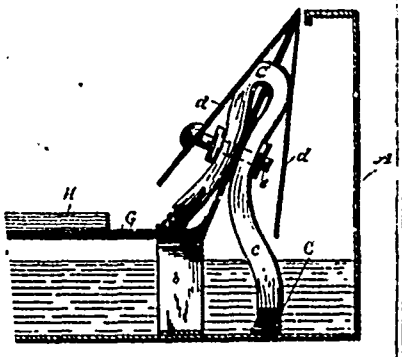
28374 Hughson's Binder for Vehicle Racks.



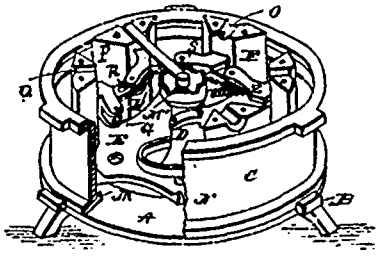
28375 Steves' Mining Machine.



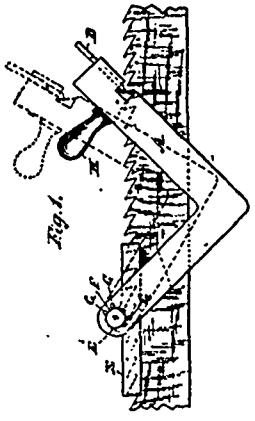
28376 Tricker's Portable Cooking Apparatus.



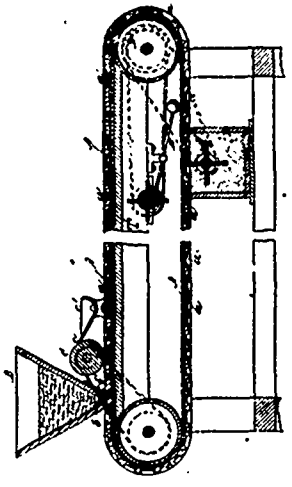
28377 Beardsley's Blotter Bath



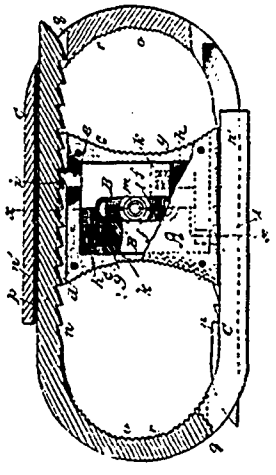
28378 McGill's Wheel-Casting Mould



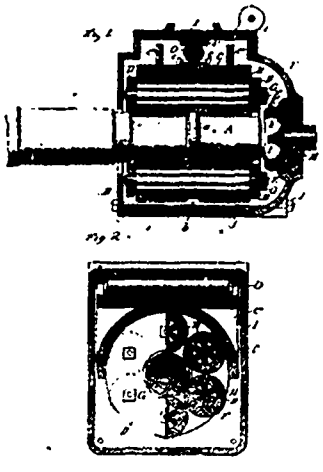
28379 Hill's Saw Swage.



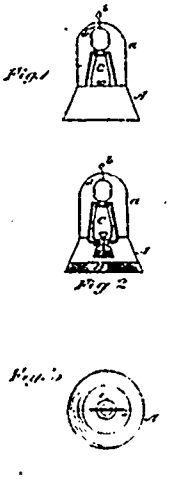
28380 Coleman's Manufacture of Confections, etc.



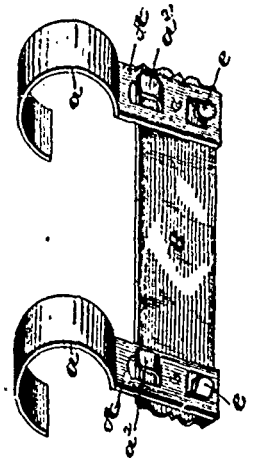
28381 McDonald's Shackle.



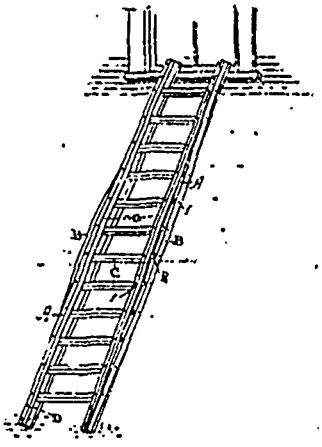
28382 Sharpneck's Anti-friction Journal Box.



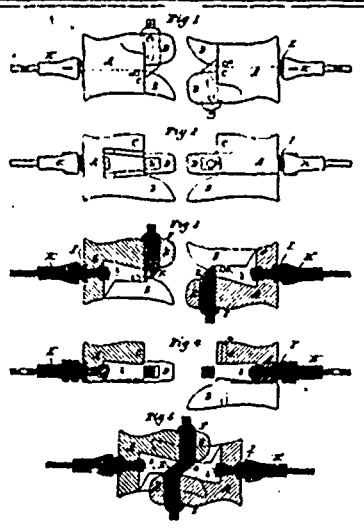
28383 Williams' Insect Trap.



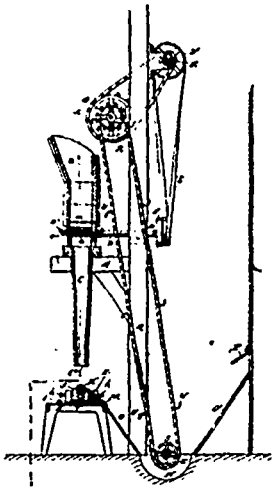
28384 Brinkerhoff's Picture Hanger.



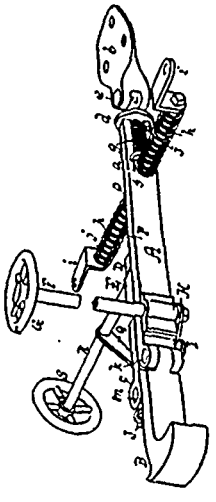
28385 Cummer's Ladder.



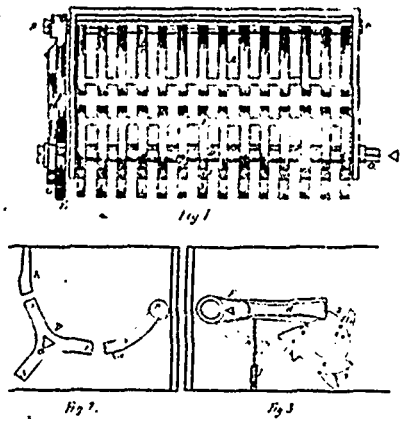
28387 Andrews' Car-Coupling.



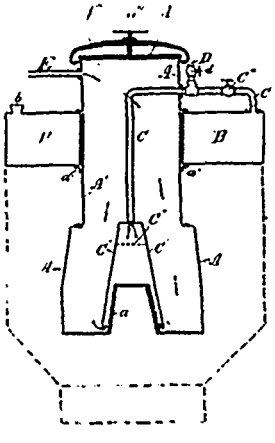
28388 Foran's Apparatus for Making Sand Cores.



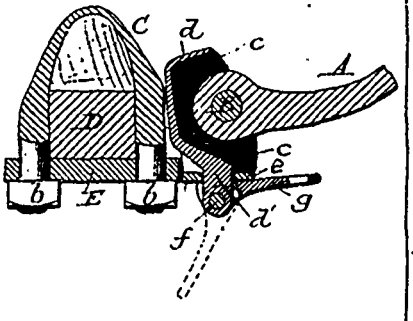
28389 Palm's Car-Coupler.



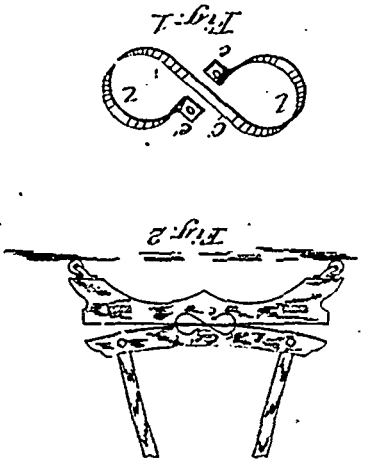
28390 Buck's Grate for Stoves, etc.



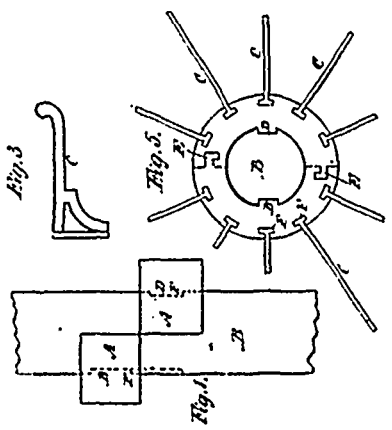
[illegible] McIlvaine's Gas Generator



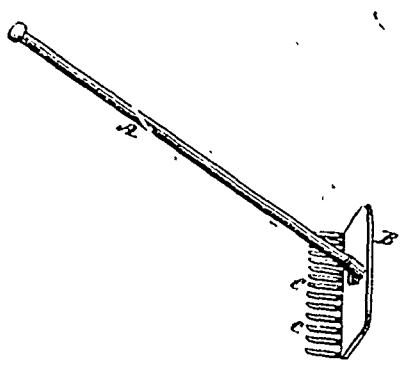
28[illegible] Shirk's Thill Coupling.



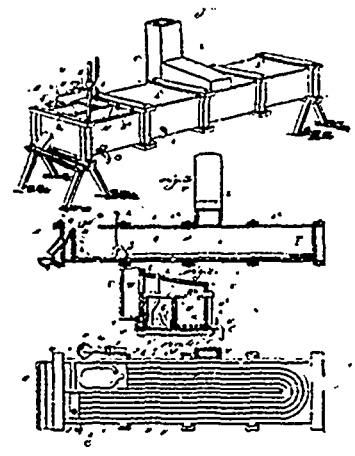
[illegible] Latulip's Platform Rocker Spring.



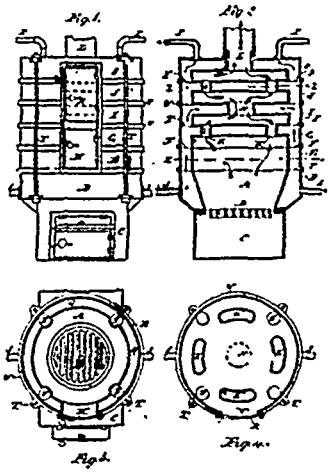
28394 Burnham's Military Accoutrement Hanger.



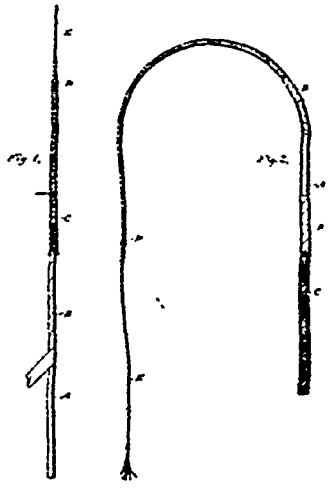
28395 Potter's Rake.



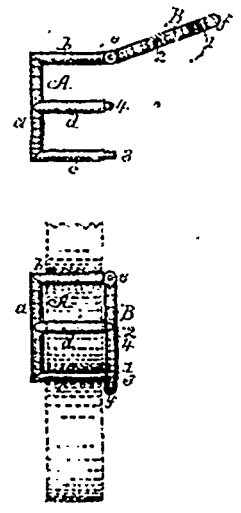
28396 Herring's Evaporator.



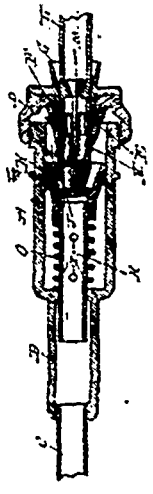
28397 Fraser's Hot Water Boiler.



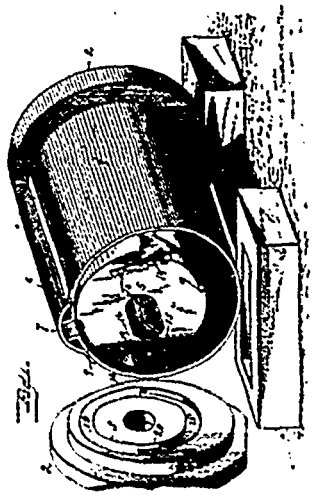
28398 Pirnie's Whip.



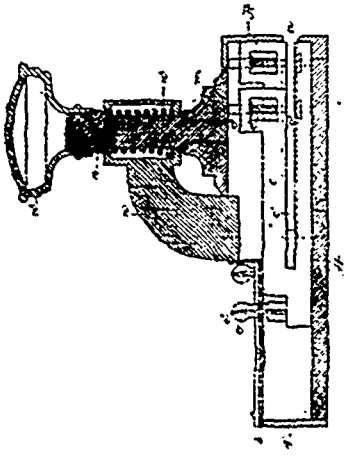
28399 Pearsall's Rein-Holder.



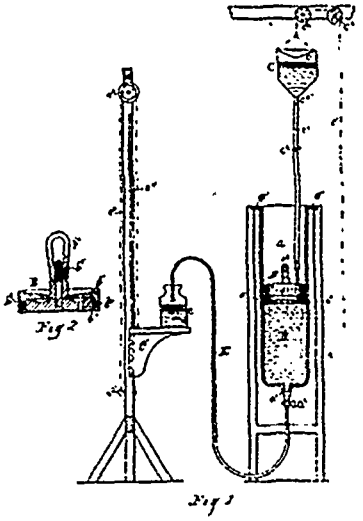
28400 Grassler's Pipe Coupling for Railway Carriages.



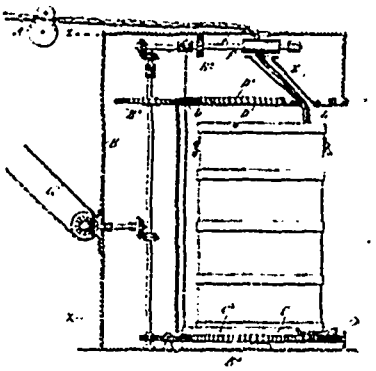
28401 Hills' Rotary Steam Engine.



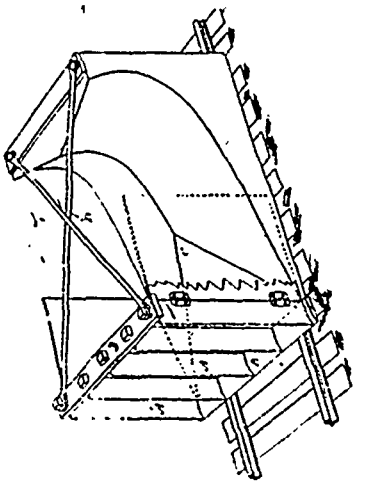
28402 Gregory's Check Protector.



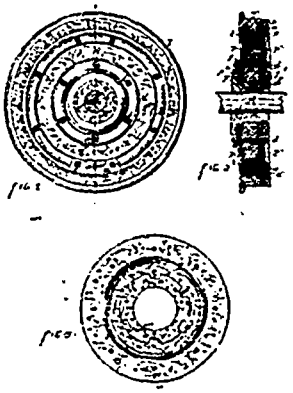
28303 Anderson's Pressure Percolator.



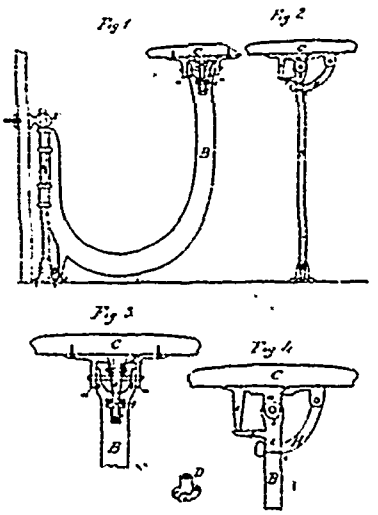
28304 Coyle's Machine for Coiling Silver.



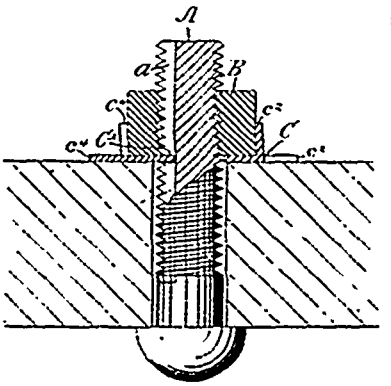
28305 Brettmayer's Snow-Plough.



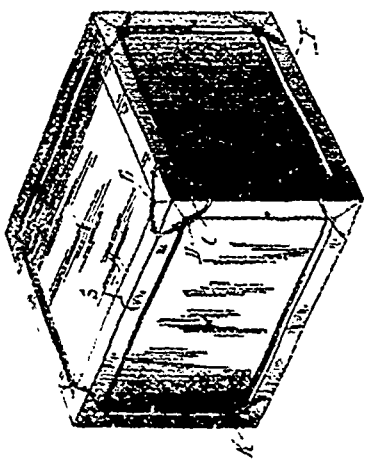
28306 Peckham's Car Wheel.



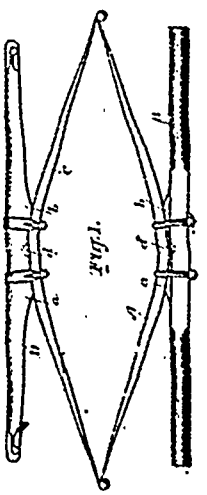
28307 Scott's Store Stool.



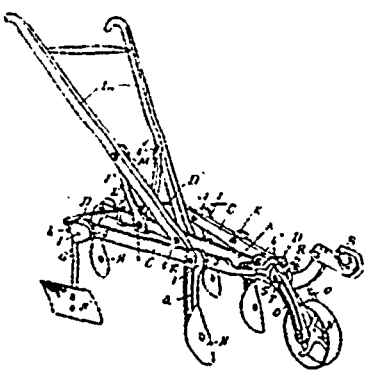
28308 Ross' Nut-Lock.



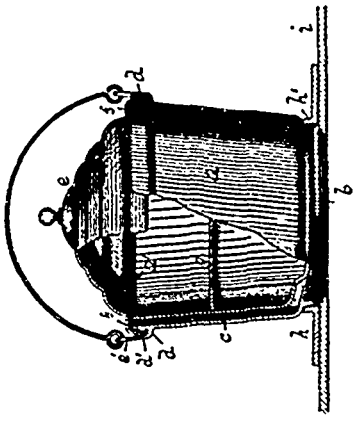
Underman's Packing Box



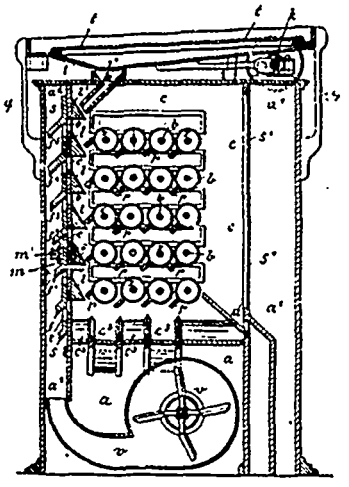
Armstrong's Single Plate Carriage Spring



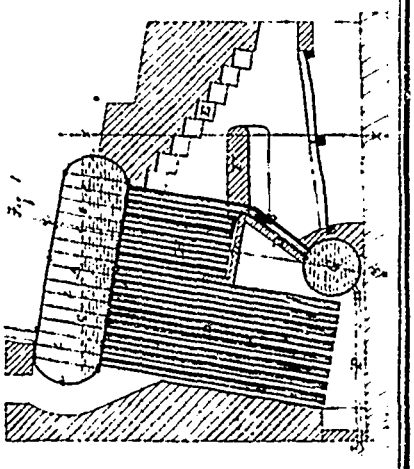
Mallery's Cultivator.



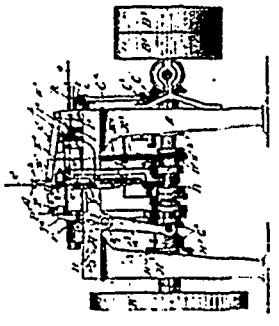
28412 Hill's Culinary Utensil.



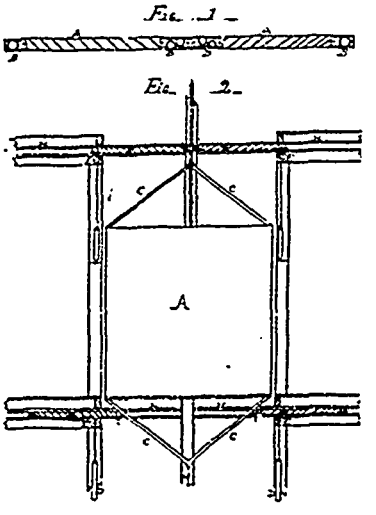
28413 Weiss' Separating Machine for Cleaning Groats.



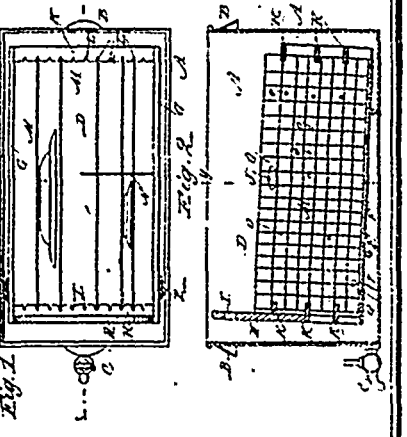
28414 Sterling's Steam Boiler, etc.



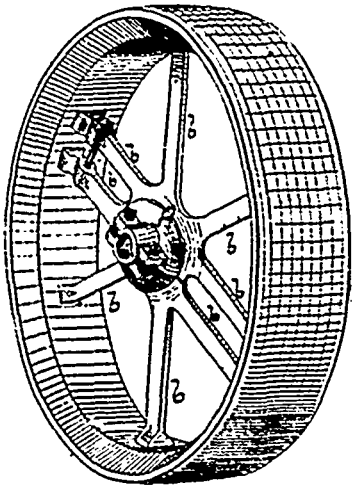
28415 Hill's Machine for Making Spur-Wheel Fencing.



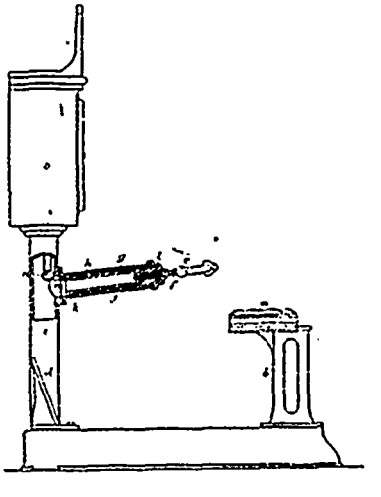
28416 Pirrie & Wize's Shutter for Elevator Shafts.



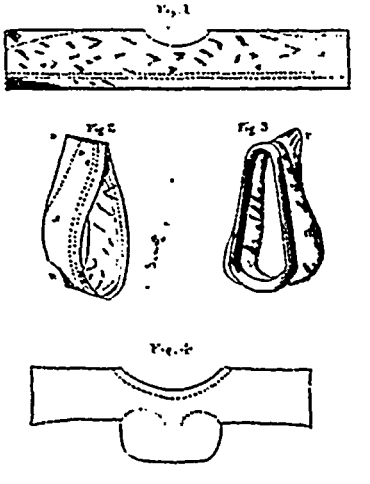
28417 Cox's Dish-Washing Machine.



28418 Dodge's Band Pulley.



28419 Everitt's Machine for Testing Muscular Power.



28793 Coleman's Art of Manufacturing Horse Collars, &c.