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RECORD

Vol. XVI.—No. 4.

APRIL, 1888.

Price in Canada \$2.50 per An.
United States - \$2.50

INVENTIONS PATENTED.

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

No. 28,785. Hydrocarbon Furnace.

(Foyer à hydrocarbures.)

Charles H. Land, Detroit, Mich., U.S., 3rd April, 1888; 5 years.

Claim—1st. The combination, with a furnace chamber having an air and vapour blast, of a muffle provided with openings in its top, and a counter air-blast pipe communicating with the interior of the muffle, substantially as described. 2nd. The combination, with a furnace chamber having escape flues, a muffle in said chamber, and a burner for heating the same, of a counter blast pipe located over the escape flues of the furnace chamber, whereby it is superheated and adapted to convey a counter blast into the furnace chamber to drive off injurious gases from the work, and to admit determined gases to the work without chilling the muffle, substantially as described. 3rd. The combination, with a muffle-furnace having a movable door and a burner for heating the furnace, of a sliding and swinging counter blast pipe adapted to communicate with the interior of the muffle, said pipe being located over the escape-flues of the furnace and connected with the movable furnace door, substantially as and for the purposes described. 4th. The combination, with a furnace chamber, a muffle having top openings, a burner and an air blast exerting a pressure upon the products of combustion, of a counter blast to communicate with the interior of the muffle and force the products of combustion out under a greater pressure than that operating the blast in the combustion chamber, substantially as and for the purposes described. 5th. The combination, with a furnace chamber, a muffle and a heating burner, of a removable door and a counter blast pipe located over the escape flues of the furnace chamber, substantially as described. 6th. The combination, with a muffle furnace provided with burner and a removable door, of an air blast pipe communicating with the burner, and a counter blast pipe supporting said door, substantially as described. 7th. The combination, with a muffle furnace provided with an air and vapour blast, of a counter blast pipe communicating with the air and vapour blast and adapted to communicate with the interior of the furnace, substantially as described. 8th. The combination, with a muffle furnace provided with vents of a muffle perforated upon its upper surface, said furnace provided with one or more burners, the construction being such that the carbonic dioxide generated within the furnace will penetrate the muffle substantially as described. 9th. The combination of a furnace chamber, an open muffle arranged in said furnace chamber and having top perforations, and a heating burner provided with an air blast and communicating with the furnace chamber to force the residue of combustion through the muffle and resist the encroachment of the atmosphere into said open muffle, substantially as described. 10th. The combination, with a furnace chamber, provided with a removable cover and a muffle, of air and oil supply pipes and a blow pipe located in front of the open muffle, substantially as described.

No. 28,786. Apparatus for Indicating Static or Dynamic Force, or other Measurement, on Prepayment of a Coin. (Appareil pour indiquer la force statique ou dynamique, ou autre mesurage, en déposant une pièce de monnaie.)

Frederick C. Lynde, Manchester, Eng., 3rd April, 1888; 5 years.

Claim—1st. An apparatus for indicating static or dynamic force or other measurement, consisting of a concealed indicator, in combination with a generator of electric sparks, or electric or other artificial light produced temporarily by a coin, which renders the position of the said indicator visible, substantially as hereinbefore described. 2nd. The combination of a fixed visible dial or scale, and a concealed movable pointer or index rendered temporarily visible by the action of a coin completing an electric circuit, substantially as hereinbefore described. 3rd. The combination of a visible pointer with a dial or scale, the marks of figures of which are concealed and rendered temporarily visible by the action of a coin producing artificial light.

4th. The combination of a concealed indicator with an electric generator, circuit wires, tubes of mercury, fork or bent wire, suspending cord, descending self-emptying and ascending coin-box, substantially as hereinbefore described. 5th. The combination of a concealed indicator and source of artificial light produced by means of a descending self-emptying and ascending coin-box, substantially as hereinbefore described.

No. 28,787. Process and Apparatus for Manufacturing Gas. (Procédé et appareil de fabrication du gaz.)

James J. Johnston, Columbiana, Ohio, U.S., 3rd April, 1888; 5 years.

Claim—1st. The process herein described of combining atoms of hydrogen and carbon of crude petroleum oil with atoms of oxygen and nitrogen of atmospheric air, and thereby forming a fixed gas, which consists in forcing atmospheric air under great pressure through crude petroleum oil heated in a vessel to a degree that will not evolve vapour therefrom, separating the resulting gas from the oil in said vessel, then conducting the gas through a series of bodies of said oil contained and heated in other vessels and separating the gas from the oil in each vessel, substantially as described. 2nd. The process herein described of combining atoms of hydrogen and carbon of crude petroleum oil with atoms of oxygen and nitrogen of atmospheric air, and thereby forming a fixed gas, which consists in forcing atmospheric air under a high degree of pressure through crude petroleum oil heated in a vessel to a degree that will not evolve vapour therefrom, separating the resulting gas from the oil in said vessel, then conducting the gas under a diminishing pressure through a series of bodies of said oil contained and heated in other vessels, and separating the gas from the oil in each vessel, substantially as described. 3rd. The process of generating gas from crude petroleum oil and solid hydrocarbons, which consists in heating said oil to a degree below the point of evolving vapour therefrom, compressing air to a high degree and conducting it through a body of said oil contained in a vessel, separating the resulting gas from the oil in the same vessel, conducting the gas successively through a series of other vessels containing heated oil and separating it therefrom in each vessel, then conducting the gas through heated solid hydrocarbons, and finally superheating the combined gases for fixing them, substantially as described. 4th. The process of generating gas from crude petroleum oil and solid hydrocarbons, which consists in heating said oil to a degree below the point of evolving vapour therefrom, compressing air to a high degree, heating the air and conducting it through a body of said oil contained in a vessel under pressure, separating the resulting gas from the oil in the same vessel, conducting the gas successively through a series of other vessels containing heated oil and separating it therefrom in each vessel, then conducting the gas through heated solid hydrocarbons and a detorsive agent, then superheating the gas, conducting it through a liquid and finally storing it in a holder, substantially as described. 5th. The combination of an air pump and a series of vessels provided with means for heating the same, pipes communicating with the top of one and the bottom of the next vessel, and air distributing and foam arresting devices within said vessels, substantially as described. 6th. The combination of an air pump, an air receiver and heater, a series of vessels provided with means for heating the same, pipes communicating with the top of one and the bottom of the next vessel, and air distributing and foam arresting devices within said vessels, and a suitable holder, substantially as described. 7th. The combination of an air pump, a series of vessels provided with means for heating the same, pipes communicating with the top of one and the bottom of the next vessel, and air distributing and foam arresting devices within said vessels, a carbon enriching retort, a superheater, a washer and a holder, substantially as described. 8th. A generator provided with a partition having a series of perforations therein, a chamber below said partition and a supply for said chamber, a perforated diaphragm near the upper end of the generator, and a discharge pipe above said diaphragm, substantially as described.

No. 28,788. Puzzle. (Jeu de patience.)

Isaac T. H. Brown, Toronto, Ont., 3rd April, 1888; 5 years.

Claim—A puzzle produced by etching or otherwise creating a figure or design in one or more colors, in fragments, upon a transparent or

translucent sheet of paper, or any other suitable material, the fragments being so designed that, when brought together to register with each other, a complete design is produced different from that which appears on the surface of the material before the fragments are brought to register together, substantially as and for the purpose specified.

No. 28,789. Curtain Pole. (*Dérouleur de rideau.*)

John W. Ramsdell, Saint John, N.B., 3rd April, 1888; 5 years.

Claim.—1st. A curtain pole curved between the ends and having straight ends fixed stationary in brackets, whereby the pole will not turn axially from an adjusted position. 2nd. A curtain pole curved between straight ends and provided with rings secured at any desired distance apart. 3rd. A curtain pole curved between straight ends and secured stationary in brackets, and provided with fixed rings, as set forth.

No. 28,790. Flush Valve for Water Closets.

(*Valve de latrines à l'eau.*)

Thomas Campbell, Saint John, N.B., 3rd April, 1888; 5 years.

Claim.—1st. The combination of the cylinder K and the piston I, substantially as and for the purpose hereinbefore set forth. 2nd. The combination, with the two cylinders K, K₁, and the pistons I, I₁, substantially as and for the purpose hereinbefore set forth. 3rd. The combination of the cylinders K, K₁ and the pistons I, I₁, with the rods P, P₁, as connected with the lever Q and the chain T, substantially as and for the purpose hereinbefore set forth.

No. 28,791. Rotary Knob Latch Furniture.

(*Meuble à bouton-loquet rotatif.*)

George B. Underwood, Toronto, Ont., 3rd April, 1888; 5 years.

Claim.—The combination, with the plate A having a divisional recess a, and spindle B provided with a knob C journalled in said plate, of the lever D, having arm d₁ and pivoted to the plate below said spindle, and a tappet F, sleeve on the spindle and having arms f, f₁, of unequal length, engaging said lever at opposite sides from the pivot of said lever, substantially as set forth.

No. 28,792. Flushing Tank for Water Closet.

(*Réservoir de latrines à l'eau.*)

John Douglas and George Douglas, Cincinnati, Ohio, U.S., 3rd April, 1888; 5 years.

Claim.—1st. The pull B, connected to the fulcrum and weighted arm C, and chain D holding elastic valve V, in combination with the valve seat E over the discharge aperture, the seat being slightly smaller in diameter than the valve and cupped to receive the valve for more than half its size, substantially as shown and described. 2nd. In a flushing tank, the discharge pipe M provided with a seat F for the reception of an elastic valve V, the seat being slightly smaller in diameter than the valve which is operated by a pull, in combination with the overflow pipe H and float Y, which supports the swinging cap S together with stop n, all arranged substantially as shown and described and for the purposes specified. 3rd. In a flushing tank, the cap S loosely mounted on frame f, in combination with overflow pipe H and float Y, which encircles said overflow pipe and supports frame f, substantially as shown and described and for the purpose specified.

No. 28,793. Sewing Machine. (*Machine à coudre.*)

The Essex Embroidery Machine Company, Haverhill (assignee of Jeremiah Keith, North Middleborough), Mass., U.S., 3rd April, 1888; 5 years.

Claim.—1st. In a sewing machine, the combination, with the stitch-forming mechanism, of a top feed adapted to bear on the upper surface of the work, an arm supporting said feed and movable horizontally in any direction, mechanism for alternately raising and depressing said arm and feed, a movable pattern located over the bed of the machine, and having two guiding or stitch-directing edges, mechanism to move said pattern intermittently, and devices through which a given series of movements are imparted from the stitch-directing edges of the pattern to the top feed, as set forth. 2nd. The combination, with the stitch-forming mechanism, of a top feed adapted to bear on the upper surface of the work, an arm supporting said feed and movable horizontally in any direction, mechanism for raising and depressing said arm and feed, a movable pattern located over the bed of the machine, and having two guiding or stitch-directing edges, mechanism to move said pattern intermittently, and two pivoted levers h, m, connected, as described, with the feed carrying arm and bearing against the two stitch-directing edges of the pattern, as set forth. 3rd. The stitch-directing or guiding pattern, composed of a flat strip or band, having its edges formed in accordance with the pattern to be produced, and provided with teeth to engage corresponding teeth of an impelling device on a sewing machine, combined with a toothed wheel formed to engage the teeth of the strip, and mechanism for rotating said wheel, as set forth. 4th. The combination, in a sewing machine, of the stitch-forming mechanism, a top feed adapted to bear on the upper surface of the work, an arm supporting said feed and movable horizontally in any direction, mechanism for raising and depressing said arm and feed, a flat pattern strip having its edges formed in accordance with the pattern to be produced, and provided with teeth to engage an impelling device, mechanism whereby said strip is moved forward intermittently, and devices through which a given series of movements are imparted from the stitch-directing edges of the pattern strip to the top feed, as set forth. 5th. The combination of the stitch-forming mechanism, a top feed adapted to bear on the upper surface of the work, an arm supporting said feed and movable horizontally in any direction, mechanism for raising and depressing said arm and feed, a flat endless flexible pattern strip or band, having its edges formed in accordance with the pattern to be produced, and provided with teeth to engage

an impelling device, pulleys journalled on the machine to support said band, mechanism whereby the band is moved step by step, and devices through which movements are imparted from the stitch-directing edges of the pattern band to the top feed, as set forth. 6th. The top feed composed of the ring having a series of radial dogs pivoted to it, said dogs being connected by springs, whereby they are normally contracted or drawn inwardly, combined with mechanism, substantially as described, for raising and lowering said feed, and for moving it horizontally, as set forth. 7th. The combination, in a sewing machine, of the stitch-forming mechanism, the top feed composed of the ring and the radial spring contracted dogs, the mechanism, substantially as described, for operating said top feed and the work raising finger or presser, and mechanism to operate it, whereby that portion of the work that is stretched by the depressed top feed is raised or stretched before the needle rises, as set forth.

No. 28,794. Separable Pulley.

(*Poulie divisible.*)

Henry J. Gilbert, Dayton, Ohio, U.S., 3rd April, 1888; 5 years.

Claim.—1st. The combination, with a pulley, of a cam clamping sleeve fitted in the shaft opening of the pulley, whereby the partial rotation of said sleeve causes it to bind upon the shaft and tightly clamp the pulley to the shaft, substantially as described. 2nd. The combination, with a pulley provided with a shaft opening, cut out or shaped to form two half circles, eccentric to each other and to the centre of the pulley, of a separable cam clamping sleeve fitted into said shaft opening, substantially as described, whereby the partial rotation of said clamping sleeve in said shaft opening centres the pulley on the shaft and firmly binds it thereto. 3rd. The combination, with a pulley, of a cam clamping sleeve slotted transversely on its inner side and fitted in the shaft opening of the pulley, substantially as and for the purpose described. 4th. A separable pulley consisting of the spokes, whose inner ends are fastened together to form a hub, and whose outer ends are tenoned and provided with locking grooves, a two-part rim secured together by dovetail keys and provided with bores for the reception of the spoke tenons, which are secured therein by dovetail locking keys, and covering rings applied to the sides of said rim, substantially as described.

No. 28,795. Machine for Separating Rinds or Peelings, Piths, Seeds and other Refuse from the Pulp and Juice of Fruit and Vegetables.

(*Machine pour enlever les écorces, moelles, graines et autres déchets des pulpes et jus des fruits et légumes.*)

Edgerton DeCew and Franklin H. Carpenter, Hamilton, Ont., 3rd April, 1888; 5 years.

Claim.—1st. In a machine for pulp cleaning, the reel B adapted to revolve, and constructed as operated in the manner herein already described. 2nd. In a machine for pulp cleaning, the cylinder D with perforated or sieve-like bottom adapted to contain the reel B, and as and for the purposes hereinbefore set forth. 3rd. In a machine for pulp cleaning, the combination, with the reel B, of the cylinder D, adapted to operate as described. 4th. In a machine for pulp cleaning, the adjustable bars B₁, with and without brushes, adapted to operate as described and as and for the purposes hereinbefore set forth.

No. 28,796. Pulp Beating Engine.

(*Cylindre broyeur de pâte papier.*)

Joshua Norton, Jr., Portneuf, Que., 3rd April, 1888; 5 years.

Claim.—1st. In a beating engine, the combination, in a vertical tub, of a submerged roll and longitudinal mid-feather, for the purposes set forth. 2nd. The combination of the roll B and mid-feather D, with curved lower edge D₁ and connecting curve D₂, all as and for the purposes set forth.

No. 28,797. Mechanism for the Treatment of Paper Fibre. (*Appareil de traitement de la fibre à papier.*)

Joshua Norton, Jr., Portneuf, Que., 3rd April, 1888; 5 years.

Claim.—1st. In a refining or finishing engine, the combination of the cylinder or case roll, carrying fly-bars contained therein, recesses formed in such cylinder, and bevel plates with diagonally set knives carried in such recesses, all as and for the purposes set forth. 2nd. In a refining or finishing engine, the combination of roll carrying fly-bars and contained in cylinder A carried on stands Z, bevel plates held in recesses in cylinder, shaft K, carried on brackets on boxes T, T₁, and shafts K₁, K₂, connected with sleeves L, L₁, and operated from shaft K, all substantially as and for the purposes described.

No. 28,798. Metallic Gas Tip. (*Bec à gaz.*)

James B. Hoguo and Charles Salter (assignees of William Carey), Montreal, Que., 4th April, 1888; 5 years.

Claim.—A small metal gas tip A, having a punched slot B, made of the required width, as a new article of manufacture, and as above described and for the purposes set forth.

No. 28,799. Folding Box. (*Boîte pliante.*)

Charles W. Elliott, Boston, Fred A. Whitney, Leominster, and Leonard F. Lawrence, Revore, Mass., U.S., 4th April, 1888; 5 years.

Claim.—The folding box A, in combination with band B, substantially as and for the purpose set forth.

No. 28,800. Box. (Bottle.)

Charles W. Elliott, Boston, Fred A. Whitney, Loominster, and Leonard F. Lawrence, Revere, Mass., U. S., 4th April, 1888; 5 years.

Claim.—In a box, the flap b and side a, whose line of junction l is reentrant, substantially as and for the purpose specified

No. 28,801. Machine for Making Metal Timber Hangers, etc. (Machine à faire les moises, etc., métalliques.)

Jacob Russell, George M. Ball, Brooklyn, Henry W. Redfield and John Cooper, New York, N. Y., U. S., 4th April, 1888; 5 years.

Claim.—1st The combination of a table C, a die B around which the bar is bent, distinct from said table, normally in place thereon during the bending of the bar, and movable bodily out of the way of the bar when the bending is completed, mechanism for so moving the die, bending devices for bending the bar around said die, and bending devices for bending the bar under the edge of the table, substantially as specified, whereby the finished article may be removed, by drawing it toward the edge of the table without encountering the die. 2nd. The combination of a stationary table C, a die B normally resting thereon, and bending rollers or devices for bending the bar around said die, and table with mechanism for lifting said die clear from said table upon the completion of the bending operations, substantially as set forth. 3rd. The combination, with the table C and die B, of bending rollers or devices E, adapted to move back and forth along the opposite sides of the die, and mechanism for moving them first fully forward, and then part way back, holding them stationary for a time, and finally moving them back to their original position, substantially as set forth. 4th. The combination, with table C and bending-rollers E, E, of the die B adapted to be lifted from the table and having a projection p, which engages a shoulder on the table, whereby the forward strain against the die, during the operation of bending by the rollers E, E, is transferred to the table, substantially as set forth. 5th. The combination, with table C and die B, of bending rollers or devices E, E, adapted to move back and forth along the sides of the die, with mechanism for so moving them and for holding them at rest in position to hold the bar while it is being twisted, and twisting levers F, F, adapted to turn down laterally upon the table, substantially as set forth. 6th. The combination, with table C and die B, adapted to be lifted from the table, of twisting levers F, F, pivoted to the opposite sides of the die and adapted to turn down against the table and to be lifted with the die, substantially as set forth. 7th. The combination, with table C and die B, the latter having recesses c, c, in its sides, of twisting levers F, F, pivoted to turn outwardly down against the table, and arranged to stand in said recesses when turned vertically, with their lateral working faces flush with the sides of the die, substantially as set forth. 8th. The combination of the B formed with recesses c, c, in its opposite sides, and half pivots h, h, with the twisting levers F, F, adapted to enter said recesses and formed with half eyes or sockets h, h, engaging said half pivots, substantially as set forth. 9th. The combination, with table C and die B, of twisting levers F, F, each pivoted on an axis in the plane of the side of the die, and at a height above the surface of the table, equal to the thickness of the bar to be operated upon, substantially as set forth. 10th. The combination, with table C and die B, of twisting levers F, F, each pivoted on an axis in the plane of the side of the die, at a height above the table equal to the thickness of the bar to be operated upon, and each formed with a projection f, at a distance from the pivot axis equal to the width of said bar, substantially as set forth. 11th. The combination, with the die B, table C and twisting levers F, F, of projections from the table adapted to engage the bottom edge of the bar and hold it against the die during the twisting operation, substantially as set forth. 12th. The combination, with the die B, table C and twisting levers F, F, of catches or pawls g, g, projecting from the table oblique on one side, to enable the bar to pass over them while being bent against the die, and abrupt on the other side, to resist the outward movement of the bar while being twisted, substantially as set forth. 13th. The combination, with the die B, table C and twisting levers F, F, of catches or pawls g, g, projecting through openings in the table in position to hold the bottom edge of the bar against the die during the twisting operation, and adapted to move up and down, and a spring acting to press the catches up, substantially as set forth. 14th. The combination, with the die B, table C and twisting levers F, F, of spring plates t, G, arranged in recesses in the table with their ends turned up to form catches t, t and plates g, g, to cover said recesses, substantially as set forth. 15th. The combination, with the table C and die B, of bending-rollers E, E, moving back and forth along the sides of the die, twisting levers F, F, and bending-roller H, moving vertically past the edge of the table and adapted to turn down the overhanging ends of the bent bar, substantially as set forth. 16th. The combination of the table C, die B, bending-rollers E, E, twisting levers F, F, bending-roller H, moving in a vertical plane past the front of the table and adapted to turn down the overhanging ends of the bent bar, and the bending-roller or rollers I, adapted to turn under the downwardly projecting ends of the bar, substantially as set forth. 17th. The combination of the table C, die B, the bending-roller E, E, moving forward and backward along the sides of the die, the twisting levers F, F, adapted to turn down against the table, the bending-roller H moving up and down past the front of the table, the bending-rollers I moving backwardly beneath the edge of the table, and suitable mechanism for driving the several moving parts in succession and for causing each, after it has performed its work, to remain stationary or nearly so, and hold the bar until the next successive part engages it, substantially as set forth. 18th. The combination, with the table C and die B, of bending-rollers E, E, twisting levers F, F, bending-roller H, bending-rollers I, a driving-shaft, suitable intermediate mechanism for imparting motion to the several moving parts, and an automatic clutch through which the machine is driven, adapted when engaged to drive the machine until the several parts have executed each one complete movement and thereby formed one timber hanger, and thereupon to disengage itself

and stop the machine, substantially as set forth. 19th. The combination, with the table C and die B, and the bending or forming tools or devices E, E, F, F, H and I, of the mechanism for operating said devices consisting of shafts Q, P, R, and J, geared together and revolving at uniform speed, and connected respectively to, and imparting movement to the said forming tools or devices, substantially as set forth. 20th. The combination, with the die B, table C and bending-rollers E, E, of sliding frame T carrying said rollers, rotating shaft Q, and a cam U on said shaft, connected with said frame and constructed and adapted to push the frame forward a full stroke, then permit it to move back a half-stroke, hold it in such position for a time, and then permit it to complete its back-stroke all in one revolution of the cam, substantially as set forth. 21st. The combination, with the die B, table C and bending-rollers E, E, of a sliding frame T carrying said rollers, a rotary shaft Q, a cam U on said shaft formed with a groove L, a pin m engaging said groove, and a connecting rod n, pivoted to said frame at one end, and carrying said pin at the other, and means, such as a spring or weight, for imparting to the frame T a rearward movement when released, substantially as set forth. 22d. The combination, with the die B, table C and bending-rollers E, E, of a sliding frame T carrying said rollers, a shaft Q, a cam U on said shaft formed with a radial slot L, having lateral notch l, at the centre of the cam, and notch l, at the periphery thereof, a pin m entering said groove, a connecting rod n, pivoted to said frame at one end, and carrying said pin at the other, whereby, on the rotation of said cam, the notch l, engages said pin and carries it forward a half-revolution until the pin drops out and slides back through the groove to the notch l, where it rests during the remaining half-revolution, when it again drops out and slides back to the notch l, and means, such as a weight or spring, for imparting to the slide a tendency to move rearwardly, substantially as set forth. 23rd. The combination, with the die B and table C, of bending-rollers E, E, and mechanism for driving them, clamping-plunger D adapted to hold the work against the rear end of the die, while the rollers E, E operate, sliding frame D, and revolving cam U, having peripheral cam-face u, for acting against said slide, substantially as set forth. 24th. The combination, with table C, die B and twisting levers F, F, of shaft P, and cam U, U, on said shaft, having each a spiral working-face engaging the ends of the levers F, and, as the cam revolves, pressing the latter down, substantially as set forth. 25th. The combination, with the table C, die B and twisting levers F, F, of shaft P, and cam U, U, on said shaft, each having a spiral working-face f, engaging the ends of the levers F, and, as the cam revolves, pressing the latter down, and a concentric face f, for holding levers down, substantially as set forth. 26. The combination, with table C, die B and twisting levers F, F, of means such as a weight or spring, for imparting to said levers a tendency to assume the vertical position, a shaft P, and cam U, U, on said shaft, for pressing said levers down, whereby, when said cams have passed, the levers fly up of themselves, substantially as set forth. 27th. The combination, with table C, die B, vertical slide B, attached to said die and having projection e, and shaft P, having cam-projection r, whereby, as the shaft turns, the projection r takes under, lifts and releases the projection e, and thereby lifts and drops the slide B and die B, substantially as set forth. 28th. The combination, with table C and roller H, of vertical sliding frame H, shaft P, cam V, on said shaft, for lifting said frame, and cam or cams V, on said shaft for pressing down said frame, substantially as set forth. 29th. The combination, with table C and roller H, of frame H, made in section sliding upon each other, in order to set the roller H higher or lower, and a filing piece r, for the direct transmission of the strain, with cam mechanism for moving said frame up and down, substantially as set forth. 30th. The combination, with table C and roller H, of rollers I and shaft J having radial arms i, i, carrying said roller or rollers, substantially as set forth. 31st. The combination, with table C, removable thickening plate C, for altering the thickness of the table and vertically moving roller H, of rollers I, shaft J having arms i, i, carrying said rollers, and bearings B, B, for said shaft, adjustable vertically to adapt the rollers I to alterations in the thickness of the table, substantially as set forth. 32nd. The combination, with table C, means for varying its thickness, vertically moving roller H, rollers I, shaft J having arms i, i, carrying said rollers, said shaft being vertically adjustable to adapt the rollers I to alterations in the thickness of the table, gear J, on said shaft, driving gear P, from which said gear is driven, and idler pinion j, between said wheels, with means for adjusting said pinion in different positions to adapt it to the changes in position of the gear J, substantially as set forth.

No. 28,802. Apparatus for Generating Illuminating and Heating Gas. (Appareil à gaz d'éclairage et de chauffage)

William T. Stewart, Sullivan Johnson, J. F. Johnson, Edwin F. Earle and Samuel U. Trent, Pittsburg, Penn., U. S., 4th April, 1888; 5 years.

Claim.—A gas generating apparatus consisting in the combination of a furnace, a gas generating retort and an injector connected therewith, a steam superheating chamber provided with a series of return pipes, a steam pipe connecting the discharge end of said return pipes with the injector, an oil supply pipe connected with said injector, and an air heating chamber also provided with a series of return pipes, the discharge end of said air pipes being connected by pipe with the gas generating retort, substantially as described and for the purposes set forth.

No. 28,803. Mechanical Movement.

(Embrayage à friction.)

Eckley B. Cox, (co-inventor with Samuel Salmon,) Drifton, Penn., U. S., 4th April, 1888; 5 years.

Claim.—1st. As an improvement in mechanical movements, two relatively movable parts which have parallel inner faces, in combination with a double cone that is placed between, and has rolling contact with, the inner faces of said parts, and is adapted to furnish a rolling vibrating bearing and support for the upper part, substantially as and for the purpose specified. 2nd. As an improvement in

mechanical movements, two relatively movable parts which, upon or within their parallel inner faces, are each provided with a circular track or bearing, in combination with a double cone that is placed between, and has rolling contact with, said tracks, and is adapted to furnish a rolling gyrating bearing for the upper part, substantially as and for the purpose shown. 3rd. As an improvement in mechanical movements, two relatively movable parts, which have parallel inner faces and are each provided within or upon its inner face, with a circular guide track or bearing, in combination with a double cone that is placed between, and has rolling contact with, each of said faces and guide tracks, and is adapted to furnish a rolling gyrating bearing for the upper part, substantially as and for the purpose set forth. 4th. As a means for enabling a relatively gyratory motion to be produced between two parts which have parallel inner faces, and in combination therewith, a double cone that is placed between, and has rolling contact with, said faces, substantially as and for the purpose shown and described. 5th. As a means for supporting a part parallel with, and enabling the same to be gyrated over, a relatively stationary part, the combination therewith of two or more double cones, which are placed between, and have rolling contact with, the contiguous parallel faces of said parts, substantially as and for the purpose specified. 6th. As a means for supporting a part parallel with, and gyrating the same over a relatively stationary part, the combination therewith of two or more double cones that are placed between, and have rolling contact with, the contiguous parallel faces of said parts, and a crank which engages with said relatively movable part, and operates to move the same bodily in a circular plane, substantially as and for the purpose shown. 7th. As a means for supporting a part parallel with, and enabling the same to be gyrated over, a relatively stationary part without change of circumferential position, the combination therewith of two or more double cones that are placed between the contiguous parallel faces of said parts, and having rolling contact with parallel circular guide tracks, which are provided upon or within each of said faces, substantially as and for the purpose set forth. 8th. As a means for supporting a part parallel with, and gyrating the same over, a relatively stationary part without change of circumferential position, the combination therewith of two or more double cones that are placed between, and have rolling contact with, parallel circular guide tracks, which are provided upon or within the contiguous parallel faces of said parts, and a crank that engages with said relatively movable part and operates to move the same bodily in a circular plane, substantially as and for the purpose shown and described.

No. 28,804. Flour-Bolt. (*Blutoir*.)

Henry J. Gilbert, Dayton, Ohio, U. S., 4th April, 1888; 5 years.

Claim.—1st. In a flour-bolt, the combination, with the bolting reel, of a series of internal oscillating buckets hung therein, and cam mechanism connecting each bucket with the end of the bolt, whereby the revolution of the reel causes the positive oscillation of the buckets and determines their position, substantially as described. 2nd. In a flour-bolt, the combination, with the bolting reel, of a series of internal oscillating buckets hung therein, projections on the end of the buckets, and a cam at the end of the bolt with which the projections at all times engage, to cause the positive oscillation of the buckets and positively control their position at all times, substantially as described. 3rd. The combination, with a bolting reel, of a series of buckets journaled therein and provided at one end with crank arms, and a cam with which said crank arms are at all times engaged, so arranged as to cause the positive oscillation of the buckets and at all times positively control their position, substantially as described. 4th. In a flour-bolt, the combination, with the reel, of the series of oscillating buckets therein, each provided with a projection, and a circular cam groove at one end of the bolt, with which said projections engage, arranged eccentric to the axis of the reel, whereby the position of the buckets is at all times regulated and controlled, substantially as described. 5th. In a flour-bolt, the combination, with the reel of the series of oscillating buckets therein, each provided with a projection, and a cam groove with which said projections co-operate, and which regulates and controls their position at all times, so arranged with reference to the direction of rotation of the reel as to cause the bucket to carry up the material and gradually pour it on the descending side of the reel, substantially as described. 6th. The combination of a bolting reel, a series of pivoted elevator buckets therein, which carry cloth to the upper portion of the reel, and a cam for controlling the position of the said buckets at all times, so arranged as to discharge their contents upon the cloth upon the descending side of the reel, substantially as described. 7th. The combination of an inner reel, self-adjusting oscillating buckets therein, rings fitted and free to revolve upon the ends of the inner reel, one ring being formed with internal gear teeth, the rods connecting the rings, an outer bolting cloth attached to the rings, a pinion meshing with the gear teeth and driven from the inner reel, and rollers supporting the ring at each side of the pinion, substantially as and for the purpose described.

No. 28,805. Process and Apparatus for Purifying and Filtering Water. (*Procédé et appareil pour purifier et filtrer l'eau*.)

Omar H. Jewell, Chicago, Ill., U. S., 4th April, 1888; 15 years.

Claim.—1st. A filter tank, in combination with a pump, a feed pipe rising to the top of the filter tank, a discharge pipe extending from the bottom of the tank up through the latter, a wash pipe extending from the upper portion of the feed pipe down through the filter to the bottom thereof, water distributors at the lower end of the wash pipe under the filter bed, and a separate discharge opening in the upper part of the filter for the escape of wash water, substantially as and for the purposes specified. 2nd. A filter tank A, in combination, with the pump B, the feed pipe B' extending to the upper part of the tank proper and then bent horizontally, the discharge pipe C extending from the bottom of the filter bed up through the tank and out at the upper portion thereof, the wash pipe D extending from the upper portion of the feed pipe to the lower part of the filter bed, and provided with water distributors D' at its lower end, and the valves b₂, b₃, b₄ and b₆, substantially as and for the purposes specified. 3rd.

The wash pipe D, in combination with water distributors D', consisting of cups provided with a fixed perforated diaphragm d, hollow stem d₂ and a sliding disk cap or cover d₃, arranged at the bottom of the filter tank and connected to the wash pipe, substantially as and for the purposes specified. 4th. A filter tank, in combination with a feed pipe, a pump for forcing water to the tank through said pipe, and a tank or reservoir containing a chemical reagent and connected by a suitable pipe with the suction pipe of the pump, substantially as and for the purposes specified. 5th. A filter tank, in combination with a feed pipe, a pump for delivering water through said pipe to the filter, a tank or reservoir for chemical reagents, a pipe connecting said reservoir with the suction pipe of the pump to feed the said reagent thereto, and a pipe connecting the said tank with the water supply, whereby water may be furnished to the chemical tank, as required, substantially as and for the purposes specified. 6th. A filter tank A, in combination with a feed pipe B, a pump B' provided with suction pipe b, a reservoir E for chemical reagents, a pipe c connecting the interior of said reservoir with a suction pipe b, a pipe c₂ connecting the discharge chamber of the pump with the upper portion of the said reservoir, and a float valve at the inner end of the pipe c₂, within the said reservoir, substantially as and for the purposes specified. 7th. The filter tank, in combination with the wash pipe, conical cups in which the ends of the wash pipe terminate within the filter bed, and a loose disk seated in the mouth of the cups and movable on a suitable guide, substantially as and for the purposes specified. 8th. The filter tank, in combination with the wash pipe terminating in branches within the filter bed, the conical distributing cups D' at the ends of the said branch pipes, the perforated diaphragms d fixed within the cups and provided with stems, and the loose disks d₃ mounted on said stems and fitted to the mouths of the cups, substantially as and for the purposes specified. 9th. In an apparatus for purifying water, the combination, with suitable electrodes and an electric generator, of a water tank or receptacle enclosing said electrodes, and provided with an inlet and outlet, whereby the water is subjected to electrolysis in passing through said tank or receptacle, substantially as and for the purposes specified. 10th. In an apparatus for purifying water, a filter tank containing a suitable filtering medium, and provided with inlet and outlet pipes, in combination with electrodes arranged within the tank, so that the inflowing water passes between them, and an electric generator connected to said electrodes, substantially as and for the purposes specified. 11th. In an apparatus for purifying water, a filter tank, in combination with a dome mounted upon the tank and communicating therewith, suitable electrodes arranged within said dome, a water supply pipe opening into the dome and arranged to deliver water between the electrodes, an outlet pipe for discharging water from the filter, and an electric generator connected to the electrodes, substantially as and for the purposes specified. 12th. In an apparatus for purifying water, a filter tank in combination with the electrodes arranged therein, and electric generator connected to the electrodes, a supply pipe for delivering water to the filter, and a tank or reservoir for chemical reagents connected with the water supply, substantially as and for the purposes specified. 13th. In an apparatus for purifying water, a filter tank in combination with a suitable supply and discharge pipes, electrodes arranged within the tank, an electric generator connected to said electrode, a pump for delivering water to the receiver, and a reservoir for chemical reagents connected to the suction pipe of the pump, substantially as and for the purposes specified. 14th. The filter tank, in combination with the feed pipe and a chemical tank, in which the receptacle for the chemical substance is provided with glass walls, substantially as and for the purposes specified.

No. 28,806. Machinery for Making Weather Strips for Doors, Windows, etc. (*Machine à fabriquer les bourrelets des portes, fenêtres, etc.*)

Josiah Poyton, New York, N. Y., U. S., 4th April, 1888; 10 years.

Claim.—1st. A machine that will automatically produce, by a single operation, a corrugated metallic binding strip and firmly secure the same to the lapped corded edges of a flexible hollow rubber cushion, when drawn within the coiled recess of said metallic binding strip, so that the opposite or free edge of said metallic strip is formed into a smooth rounded edge, by being underlapped, to firmly press down upon the base of the thin hollow cushion, when the same is nailed to the sill of a window or jams of a door, substantially as above described. 2nd. The horizontal forming device, shown at m, n and c, under plate d, also the bevelled rollers a, n₁ and r, operating with the metallic rubber guide e, c, constructed as shown and described and operating in combination with a, b, c, e, o, s and f, the whole constructed, arranged and operating for the specific purpose set forth.

No. 28,807. Separating Machine. (*Émoteur*.)

Noah W. Holt, Manchester, Mich., U. S., 4th April, 1888; 5 years.

Claim.—1st. In a separating machine, an aspirating chamber and a dust separating chamber surrounding the aspirating chamber, in combination with a fan which takes air and light material from the aspirator and delivers it to the separating chamber, these parts being inclosed within an outer shell or casing, substantially as set forth. 2nd. In a separating machine, the combination of an aspirator, a surrounding separating chamber, a fan and air passages connecting the aspirating chamber, the fan and the dust separating chamber, whereby air currents are caused to pass continuously through and within the machine, substantially as set forth. 3rd. In a separating machine, the combination, with a vortex chamber, of a fan within the circumference of the said chamber, a shell of less diameter arranged substantially concentric to the walls of said chamber, and a flange depending from the upper part of the machine within the said inner shell, substantially as set forth. 4th. In a separating machine, the combination of an aspirating chamber, a separating chamber which is inclosed on all sides, and means, substantially as described, for producing a continuous air current through the material to be purified or separated, substantially as set forth. 5th. In a separating machine, the combination of the outer

funnel-shaped shell B, B₁, the inner shell C, E, concentric thereto, the aspirator shell also concentric thereto, and the fan connected at its eye to the upper end of the aspirator, substantially as set forth. 6th. In a separating machine, the combination of an inclosed separating chamber, an aspirator arranged within the separating chamber, and a fan for producing air currents through the aspirator and for producing a vortex within the separating chamber, substantially as set forth.

No. 29,808. Manufacture of Moulds and Matrices for Stereotype Plates.
(Fabrication des moules et matrices pour plaques stéréotypes.)

George Eastwood, Kingston-upon-Hull, Eng., 4th April, 1888; 5 years.

Claim.—1st. In the manufacture of moulds or matrices for stereotype plates, the use, as set forth, of a facing, composed of sheets of tissue paper, or other like material, pasted together with a composition containing glycerine and a starchy material, substantially in the proportions specified, whereby the sheets are kept in a flexible and elastic state, are prevented becoming too hard before use, are rendered sensitive to moisture, their contraction on application of heat greatly reduced, and the matrix or mould hardened when heated. 2nd. In the manufacture of moulds or matrices for stereotype plates, the use, as set forth, of a backing, consisting of a dry, thick sheet of soft paper, blotting paper, felt or other suitable substance, capable of receiving and retaining an impression, one side of said backing having a coating of a composition containing glycerine and a starchy material, substantially in the proportions specified and for the purpose set forth. 3rd. In the manufacture of moulds or matrices for stereotype plates, the use, in combination, of a facing and a backing, said facing being composed of sheets of tissue paper, or other like material, pasted together, with a composition containing glycerine and a starchy material, substantially in the proportions specified and for the purpose set forth, and said backing being composed of a dry, thick sheet of soft paper, blotting paper, felt or other suitable substance, capable of receiving and retaining an impression, one side of said backing having a coating of adhesive material which unites it to the back of the facing, substantially as set forth. 4th. In the manufacture of moulds or matrices for stereotype plates, the use of muslin or other suitable thin textile material between the facing and the blanketing, while said facing is being rolled or pressed, as and for the purpose set forth. 5th. In the manufacture of moulds or matrices for stereotype plates, the process hereinbefore described, which consists in laying upon the type a facing, composed of sheets of tissue paper, or other like material, pasted together, with a composition containing glycerine and a starchy material, substantially in the proportions specified and for the purpose set forth, in then covering the back of the facing with a piece of muslin or other thin textile material, and with a blanketing, in then submitting the whole to rolling or pressing, in then removing the blanketing and the muslin, in then placing upon the back of the facing a backing, consisting of a dry, thick sheet of soft paper, blotting paper, felt or other suitable substance, capable of receiving and retaining an impression, that side of the backing which is placed in contact with the facing, having a coating of adhesive material, in then laying blanketing upon the backing, and in then submitting the whole to rolling or pressing, whereby a matrix is formed, all substantially as set forth. 6th. In the manufacture of moulds or matrices for stereotype plates, the combined use of sand and of an adhesive material to back up the blanks in the matrix, substantially as set forth. 7th. In the manufacture of moulds or matrices for stereotype plates, the combined use of sand and of a composition containing glycerine and a starchy material, substantially in the proportions specified, to back up the blanks in the matrix, substantially as set forth.

No. 28,809. Wind-Motor. (Moulin à vent.)

Alvin T. Winchell, Albion, Mich., U.S., 4th April, 1888, 5 years

Claim.—1st. In a windmill, the combination, with a pinion on the wind-wheel shaft, and a pinion upon the upright shaft, of a gear-wheel, engaging the latter and journaled in the turntable beyond the upright shaft from the wind-wheel shaft, or at right angles thereto, and an intermediate idle gear engaging said first and last named pinions, whereby the tendency to creep is neutralized, substantially as described. 2nd. The combination, with the turntable and wind-wheel shaft, of the gear G on the wind-wheel shaft, and the gear G₁ journaled in the turntable opposite the wind-wheel shaft, and an intermediate idle gear G₂, said gear G₁ engaged with a driving gear on the upright shaft, substantially as described. 3rd. The combination, with the wind-wheel shaft and pinion G loosely journaled thereon, of a clutch K and K₁, and means for throwing said clutch in and out of engagement with said gear G, substantially as and for the purposes described. 4th. The combination, with a wind-wheel shaft and pinion G loosely journaled thereon, said pinion provided with bevelled slots p at its back, of the clutch K and engaging fingers K₁, adapted to enter said slots, the construction being such that the clutch may drive the pinion when the motion of the wind-wheel exceeds that of the pinion, but the pinion may ride past the clutch when its motion exceeds that of the wind-wheel, substantially as described. 5th. The combination, with the wind-wheel shaft, of a drive pinion G, a clutch for throwing it in or out of gear, and a pumping rod engaged with the wind-wheel shaft by an eccentric, the construction being such that the driven shaft F and the gear mechanism may be thrown into or out of engagement with the wind-wheel without stopping the action of the pump rod, substantially as and for the purposes described.

No. 28,810. Ratchet Drill-Stock.

(Boîte à foret à rochet.)

Corydon H. Wilmoth, Terre-Haute, Ind., U.S., 4th April, 1888; 5 years.

Claim.—1st. In a ratchet drill-stock, the combination of a shaft having a socket adapted to hold a tool, a handle having a bearing in

which the shaft rotates, an operating lever pivoted on the shaft and having a ratchet-and-pawl connection therewith, which operates to turn the shaft when the lever is moved in one direction only, a cog-wheel mounted on the shaft so as to turn thereon and having a ratchet-and-pawl connection therewith, and intermediate connecting mechanism connecting said cog-wheel and said operating lever, whereby the wheel and the shaft are turned in the same direction as at first during the return movement of the operating lever, substantially as specified. 2nd. In a ratchet drill-stock, the combination of the drill-shaft having the recessed collar C, one or more pawls pivoted to the collar in said recess, the cog-wheel arranged to turn on the shaft and having on one side ratchet-teeth which engage said pawl or pawls, the ratchet-wheel secured to the shaft, the handle having a bearing in which the shaft rotates, the operating lever arranged to turn on the shaft and carrying a pawl which engages said ratchet-wheel, and the toothed lever pivoted to the handle and to the operating lever, all arranged to co-operate substantially as and for the purpose specified. 3rd. In a ratchet drill-stock, the combination, with the interiorly screw-threaded shaft having a socket adapted to hold a tool, the handle having a bearing in which said shaft is arranged to rotate, and the operating lever having a ratchet and pawl connection with the shaft of the notched wheel W, mounted on the screw, so as to turn therewith, rod X, spring Z, lever Z, all substantially as and for the purpose specified.

No. 28,811. Bag and Method and Machinery for making the same. (Sac et mode et machine de fabrication des sacs.)

William H. Kerr, Durham, N.C., U.S., 4th April, 1888; 5 years.

Claim.—1st. A bag making machine consisting of the following elements in combination, viz. a pair of lips or folders to turn the edges of the fabric inward upon the body, a pair of stitching mechanisms arranged to stitch the folded edges, a cutter to sever from the hemmed sheet a portion sufficient to produce one bag, a folding blade and guides to fold the severed portions midway between, and parallel with, the two hems, and a second pair of stitching mechanisms to stitch the sides of the hemmed and folded goods. 2nd. In a machine for making bags, the combination of two stitching machines and mechanisms for imparting motion simultaneously and equally to both guides or folders, for turning both edges of a fabric before it reaches said machines, a cutter for severing the fabric, a folding plate moving in a plane at right angles to the travel of the fabric during the hemming operation to fold the severed portion, and a second pair of stitching machines in a plane, at right angles to the first pair, for stitching the severed portion at right angles to the first lines of stitching. 3rd. In a bag machine, the combination of four sewing machines arranged in pairs, the first pair being arranged to stitch the two edges of a strip of goods simultaneously, and the second pair being arranged to stitch a severed section of said fabric in lines at right angles to the stitching of the first pair. 4th. In a bag machine, the combination of two pairs of sewing machines and an intermediate folder, the first pair of machines having their needle bars arranged to work vertically, the folder arranged to rise vertically beneath the goods stitched by the first pair and serving to fold the same between the two lines of stitching, and to carry the folded goods to the second pair of sewing machines, and said second pair having their needle-bars arranged to work in horizontal planes. 5th. The combination, in a bag machine, of a bed or table, folders or lips for turning over the edges of the fabric traversing said table, two sewing machines adapted to simultaneously stitch the two folded edges, and an intermittently-acting knife or cutter adapted and arranged to sever from the hemmed fabric the amount of goods required for the formation of one bag. 6th. In a bag machine, the combination of a bed or table, folding guides or lips adapted to turn or fold the edges of a fabric passing over said table, two stitching mechanisms adapted and arranged to stitch the folded edges, an intermittently acting cutter to sever from the hemmed goods, a portion suitable for the formation of one bag, and an intermittent feeding device located between the stitching mechanisms and the cutter, and arranged to act only when the cutter is at rest, whereby the material is carried beneath the cutter but is prevented from moving while the cutter is acting. 7th. In combination with a bed or table and with a stitching mechanism provided with the usual feed-dog, feed-rolls actuated through connection with the stitching mechanism and operating synchronously and equally with the feed-dog, whereby long or heavy material may be drawn past the stitching mechanism without undue strain upon the feed-dog. 8th. In combination with a stitching mechanism and with a cutter, a feeding roll located between the cutter and the stitching mechanism, the cutter and feed-roll being adapted to operate alternately, and the stitching mechanism to act continuously, and a take-up device located between the feed-roll and the stitching mechanism and serving to take up the stitched material accumulating between the feed-roll and stitching mechanism, while the feed-roll is at rest and the cutter is in action. 9th. In combination with a stitching mechanism and an intermittently acting cutter, a feed-roll located just in rear of the stitching mechanism and adapted to act in unison with the feed-dog thereof, a second feed-roll located just in advance of the cutter and adapted to operate in alternation therewith, and an automatic take-up device located between the two feed-rolls and serving to draw the goods taut between them, while one is in action and the other at rest. 10th. In a bag machine, the combination, with a cutter, of yielding presser-plates movable with the cutter to and from the supporting bed, said plates serving to hold the material while the cutter acts upon it, and to prevent its being lifted by or with the cutter. 11th. In combination with a fixed bed and a cutter movable to and from the same, yielding presser-plates movable with the cutter, and a folding plate arranged to rise through an opening in the bed and to pass between the presser-plates, to fold the severed material at right angles to the edge of the cutter. 12th. In a bag machine, the combination of a supporting-bed, a cutter, a pair of presser-plates to hold the material upon the bed while acted upon by the cutter, a stitching mechanism above the presser-plates, and a folding plate adapted and arranged to pass between the opposing faces of the presser-plates, to fold the goods lying beneath them and to carry the same in a folded condition to the stitching mechanism. 13th. In a bag machine, the combination, with an intermittently acting feed-

roll, of a cutter arranged to act alternately therewith to sever the material advanced by the roll. 14th. In a bag machine, the combination of an intermittently acting feed-roll, an intermittently acting cutter arranged to act in alternation with the feed-roll, and a yielding presser plate movable with the cutter and serving to hold the material while being cut, and to release it when the cutter rises and the roll begins to feed. 15th. In combination with stitching mechanisms as E, E', a reel B for containing a supply of goods to be hemmed, a movable plate C bearing against the goods between the reel and the stitching mechanism, and a spring bearing against said plate and serving to hold it against the goods with a yielding pressure, substantially as and for the purposes set forth. 16th. In combination with a stitching mechanism and a reel for holding the goods to be stitched, an intermediate yielding plate bearing against the goods and provided with inwardly turned lips to fold the edges of the goods preparatory to stitching. 17th. In combination with stitching mechanisms as E, E', and with reel B, intermediate swinging plate C, and spring D bearing against said plate and serving to hold the same, with a yielding or elastic pressure, against the goods passing from the reel to the stitching mechanism. 18th. In combination with stitching mechanisms as E, E', each provided with the usual feeding devices, and both adapted to feed in the same direction, a feed-roll J in rear of said stitching mechanisms, timed to feed exactly in unison therewith, whereby the feed-dogs are relieved of a portion of the labor and strain of feeding the material forward, and the material is kept smooth and fed equally throughout its width. 19th. In combination with sewing mechanisms as E, E', feed-rolls J, K, in rear thereof, the roll J provided with a ratchet-wheel *g*, and the shaft of one of the sewing mechanisms being provided with an eccentric *j* and a pitman *i*, provided at one end with a dog *b*, to engage with the ratchet-wheel *g*, and connected at the other end with eccentric *j*. 20th. In combination with sewing mechanisms, as E, E', an intermittently acting cutter, as S, a feed-roll L, located between the sewing mechanism and the cutter, and provided with a ratchet-wheel *k*, an eccentric X rotating synchronously with the movements of the needle of the stitching mechanism, a pitman connected with said eccentric, dogs or pawls *l, l*, carried by the pitman and serving alternately to push and pull the ratchet-wheel, and a cam-disk *i* adapted and arranged to throw the dogs out of engagement with the ratchet-wheel. 21st. In combination with a sewing mechanism, as E, eccentric X, pitman Q connected with said eccentric and provided with dogs *l, l*, feed roll L, provided with ratchet-wheel *k*, cam disk R provided with notch *v*, cross-head T provided with cutter S, and rod *p*, and stud *u* projecting from said rod and adapted to enter the notch *v*, and turn disk R. 22nd. The combination of feed-roll L, provided with ratchet-wheel *k*, a reciprocating pitman provided with pawls to engage with and rotate said wheel, a cam-plate to throw said pawls out of engagement with the ratchet-wheel, a reciprocating cross-head T, provided with a cutting-blade S, and a rod *p* carried by the cross-head and provided with a stud *u*, to engage with and move the cam-plate as the cross-head and knife rise and fall, said parts being constructed and arranged substantially as set forth, whereby the feed-roll is caused to advance a given quantity of material to the cutter, then to come to rest and hold the material against further movement while the cutter descends and rises again clear of the material. 23rd. In combination with cross-head T provided with blade or cutter S, arms *s* and tubular necks *e*, stems *t, t*, provided with plates *u, u*, and springs *v, v*, encircling the stems and serving to press the stems and plates downward. 24th. In combination with presser-plates *u, u*, folding plate Y, adapted and arranged to rise between said parts, for the purpose set forth. 25th. In combination, with yielding presser-plates *u, u*, folding-plate Y provided with a serrated edge and arranged, substantially as described and shown, to rise and carry the bag material upward between the presser-plates, the serrated edge serving to prevent the material from shifting its position upon the plate. 26th. In combination with presser-plates *u, u*, and sewing mechanism above the same, a folding plate arranged to rise between the plates and to carry the material lying beneath them in a folded condition to the sewing mechanism. 27th. In combination with sewing mechanism, as Z, presser-plates below said mechanism, a bed beneath said presser-plates, and a folding-plate mounted in an opening in the bed and arranged to rise between the plates, to fold the material lying beneath them and to carry it to the sewing mechanism, said folding-plate being notched to clear the feeding devices of the stitching mechanism. 28th. In combination with cross head T provided with blade S, presser-plates *u, u* and stud *v*, folding-plate Y, slide D, and lever C pivoted between the slide D and plate Y, and supporting said parts at opposite sides of its pivot, and rotary shaft V provided with cams W and B, the former serving to operate the cross-head and the parts carried thereby, and the latter serving to actuate the slide D, lever C and folding-plate Y. 29th. A bag machine consisting of a bed or table, guides for folding the edges of a strip of material moving over the table, sewing mechanism arranged to stitch the two folded edges simultaneously, an intermittently acting feed device in rear of, and adapted to feed faster than, the sewing mechanism, an intermittently acting cutter arranged to act alternately with the intermittent feed device, yielding presser-plates adapted to bear upon and hold the material during the operation of the cutter, a folding-plate adapted to rise between the presser-plates, fold the material and carry it upward, and sewing mechanism arranged to receive the folded material from the folding-plate, and gearing and actuating mechanism, substantially as shown and described, for imparting motion to the various parts. 30th. The combination, in a bag machine, of the following elements, to wit: a supporting-bed A, folders B, to turn the edges of material passing over the bed, sewing mechanisms E, E', for stitching the folded edges, feed-rolls J, K, in rear of the stitching mechanisms, ratchet-wheel *g* secured upon roll J, pitman *i* provided with dog *b*, to engage with ratchet-wheel *g* and connected with eccentric *j*, spring arms O provided with cross-bar N, feed-rolls L, M, ratchet-wheel *k*, secured upon roll L, pitman Q provided with dogs *l, l*, to engage with said ratchet-wheel and connected with eccentric X, cam-plate R reciprocating cross-head T provided with blade S and stud *v*, presser-plates *u, u*, carried by the cross-head *s*, rings *t* serving to press the plates down upon the bed, folding-plate Y, lever C and slide D, stitching mechanism Z, *s*, above the presser and folding-plates, shaft V provided with cams B and W, shafts G and H, and gearing connecting

said shafts with each other and with the sewing mechanisms. 31st. The herein described method of forming bags, which consists in, first hemming the two ends of a strip of bag material, next severing from the strip a portion sufficient for one bag, then folding the material parallel with and midway between the two hems, and finally joining the edges extending from the fold to the outer edges of the hems. 32nd. As a new article of manufacture, a cloth bag having a folded or seamless bottom, stitched side seams and a hemmed mouth. 33rd. In the process of manufacturing bags, the steps which consists in folding the bag material across its middle to form the bottom, and then stitching the edges together to form the sides. 34th. A bag of woven material having a folded seamless bottom and stitched side seams, substantially as shown and described.

No. 28,812. Valve Mechanism for Air Compressors, etc. (*Mécanisme de soupape pour pompes à air, etc.*)

Edwin Reynolds, Milwaukee, Wis., U.S., 4th April, 1888. 15 years.

Claim.—1st. In an air compressor, blowing engine, or like machine, the combination of a self-opening delivery valve, a rod having a sliding connection with said valve and serving, when moved in one direction, to close the same, a catch adapted to hold the valve closed, and a movable stem or trip subject to the opposing pressures of the fluid in the receiver and in the compressor, and arranged to act upon the catch, whereby the catch is caused to hold the delivery valve closed until the trip is moved by the pressure of the fluid in the compressor, overcoming the pressure or resistance of the fluid in the receiver, and then to release the valve, thereby permitting the latter to open. 2nd. In combination with the delivery valve of an air compressor, blowing engine, or like machine, a connecting device between said valve and a moving part of the machine for closing the valve, a catch or hook for holding said valve closed, a weight or spring for opening said valve when released by the catch, and a trip controlled by the pressures in the air cylinder and in the receiver for releasing the catch, whereby the delivery valve is released and opened when a certain predetermined rotation is established between the receiver and cylinder pressures. 3rd. In an air compressor, blowing engine or like machine, the combination of a self-opening delivery valve, a catch for holding said valve closed, a rod or connection extending from a moving part of the machine to the valve and serving to close the latter, a cylinder communicating at opposite ends with the air cylinder and the receiver, and a piston arranged within said cylinder and serving to release the catch, when the pressure on the face of the piston receiving air from the air cylinder overcomes the pressure on the face receiving air from the receiver. 4th. In combination with the delivery valve of an air compressor, blowing engine, or like machine, a catch adapted to engage said valve and hold it closed, and a trip for releasing said catch, actuated and controlled by the relative pressures in the air cylinder and in the receiver. 5th. In combination with the delivery valve of an air compressor, blowing engine, or like machine, a catch adapted to engage and hold said valve out of action, a trip for releasing said catch, actuated and controlled by the relative pressure in the air cylinder and in the receiver, and an adjustable resistance for varying the point of relative pressures at which the trip shall release the catch. 6th. In combination with air cylinder A, head B provided with valve chambers, inlet valve C, delivery valve D, wrist-plate W, rod R, connecting valve C, with the wrist-plate, slotted rod R, connecting valve D and the wrist-plate arm E, attached to stem of valve D, and provided with block G, hook or catch L, provided with tail M, cylinder O, piston P arranged within said cylinder, rod S extending from the piston to a point just beneath tail M, and pipes T and U respectively connecting opposite ends of cylinder O with the air receiver and the air cylinder. 7th. In an air compressor, blowing engine, or like machine, the combination of a delivery valve provided with a weighted arm and with a projecting block or lug, a pivoted catch adapted and arranged to engage with said lug and to hold the valve closed, a cylinder communicating at its opposite ends with the air receiver and air cylinder, and a piston located within said cylinder and serving to release the catch when the pressure from the air cylinder reaches a prescribed relation to that from the receiver. 8th. In an air compressor, blowing engine, or like machine, the combination, with the delivery valve D, of two arms rigidly attached to its stem, a pin *a* carried by one of said arms, a slotted rod connected with a moving part of the machine, and straddling said pin, a pivoted catch L, adapted to engage with the second arm and provided with a tail M, a spring N, bearing upon said tail, cylinder O, communicating at opposite ends respectively with the air receiver and the air cylinder, piston P within said cylinder, and rod S extending from said piston to a point just beneath tail M, when the valve is closed. 9th. In combination with valve D, catch-hook L and tripping devices therefor, constructed and arranged to open as set forth, a variable depressing device applied to the tail of said catch, for the purpose explained. 10th. In combination with valve D and its described tripping mechanism, spring N and set screw U, bearing upon said spring and serving to vary the resistance of the catch to the force exerted by the piston of the tripping mechanism.

No. 28,813. Weather-Strip for Doors, Windows, etc. (*Bourrelet de porte, fenêtre, etc.*)

Joshua Poyton, New York, N.Y., U.S., 4th April, 1888. 10 years.

Claim.—1st. A flexible tubular hollow weather-strip, consisting of a hollow rounded cushion or pad C, having its two longitudinal edges laid together and firmly stitched to a strengthening textile cord or strip *a*, so as to form a part of the same, thereby forming a projection or flexible rib along the edges of the rubber cushion C, to be received and firmly held in position by the outer under turned edge *o, o*, of the corrugated metallic binding strip *w*, all constructed, arranged and operating as above set forth. 2nd. In combination with the rounded hollow cushion C, having longitudinal corded edges, a corrugated metallic strip *w*, having an outward under turned edge to grasp and firmly hold the corded edges of the hollow rubber cushion

C, while the inner underlapped rounded free edge i, of said strip m, presses firmly downward upon the base of the flexible tubular cushion C, without cutting the same, when nailed upon the door or window, substantially in the manner and for the purpose set forth.

No. 28,814. Letter and Bill File.

(*Serre-papier*)

Louisa Lawrence (assignee of George F. Chappell), New York, N.Y., U.S., 4th April, 1888; 5 years.

Claim.—1st. In a letter file, an arm having one or more wires affixed thereto, pivoted vertically at or near one end, and adapted to vibrate in a plane parallel with the board or tablet. 2nd. In a letter file, an arm having one or more wires affixed thereto, pivoted vertically at or near one end, to vibrate, as set forth, and provided at its other end with a handle or extension. 3rd. In a letter file, the combination of an arm having one or more wires affixed thereto, pivoted vertically at or near one end, to vibrate, as set forth, and a catch or retaining device to keep said lever in its closed position. 4th. In a letter file, the combination of the base-plate 5, the duplex puncturing wires, the arm 9 pivoted vertically at or near one end beyond said wires, to vibrate as set forth, and having affixed thereto the duplex transfer wires.

No. 28,815. Measuring or Invoicing Machine.

(*Machine à mesurer ou facturer*)

John C. Dale, Bennington, Kan., U.S., 5th April, 1888; 5 years.

Claim.—1st. The combination of the drawing roll, with a tension roll, which forces the material being measured against the drawing roll, and tension roller is mounted in the upper ends of the springs D, substantially as shown. 2nd. The combination of the frame, the bracket A mounted thereon, with the stationary revolving clamps and the revolving clamps, substantially as set forth. 3rd. The combination of the supporting brackets A, G, the stationary and adjustable clamps for holding the boards, the drawing roller F, the tension roller E carried by the springs D, the tooth H upon the roller, the cog-wheel I with which the tooth engages, and the dial plate, substantially as shown and described.

No. 28,816. Reel Bolt, etc.

(*Blutoir, etc.*)

Oliver P. Hurford, Chicago, Ill., U.S., 5th April, 1888; 5 years.

Claim.—1st. The combination of a reel, provided with bolting cloth, an interiorly arranged brush for sweeping the inner surface of said cloth, and a device secured on the inside of the reel frame and adapted, during the revolutions of the reel, to periodically disturb or agitate the outer end of the brush, and free it of matter which may have lodged thereon, as set forth. 2nd. The combination of a reel, provided with bolting cloth, an interiorly arranged brush, having an opening in its base between the rows of bristles, and means for holding said brush at the upper part of the reel, whereby the said brush may sweep the inner surface of said bolting cloth at the upper part of the reel, and a portion of the sweepings descend through said opening to the bottom of the reel, thus avoiding a clogging of the brush, as set forth. 3rd. The combination of a reel, provided with bolting cloth, an interiorly-arranged brush, having an opening in its base between the rows of bristles, means for holding said brush at the upper part of the reel, and a clearing strip secured to the interior of the reel frame and revolving therewith, as and for the purposes set forth.

No. 28,817. Coupling of Railway Cars.

(*Attelage de chars.*)

John W. Chisholm, Liverpool, N.S., 5th April, 1888; 5 years.

Claim.—The combination of the rod A, link J, pin G, dog E and slotted rod H, substantially as and for the purposes hereinbefore set forth.

No. 28,818. Carriage Circle.

(*Rond d'avant-train.*)

James Woods, St. Catharines, Ont., 5th April, 1888; 5 years.

Claim.—1st. A carriage circle consisting of a top circle A, F, having extended bearings I, d, at each end and in combination therewith, the bottom plate B having extended bearings e, e, constructed and operating substantially as shown and specified. 2nd. The reach-iron H, bolted at rear and at front to top circle A, F, substantially as shown and specified.

No. 28,819. Spark-Arrester.

(*Garde-tincelle.*)

William J. Ussory, LaSalette, Ont., 6th April, 1888; 5 years.

Claim.—A spark-arrester for smoke stacks and pipes, consisting of a drum A, having a pipe section B entering through the bottom, and an outlet at the top, and two cones C united at their bases and provided with a downward flange D, projecting from said united bases, and a wire screen E or braces F, supporting said cones from the wall of the drum, whereby the cones will be directly above the smoke-section B, substantially as and for the purpose set forth.

No. 28,820. Device for Transmitting Power.

(*Appareil de transmission du mouvement.*)

Wallace H. Dodge, Mishawaka, Ind., U.S., 5th April, 1888; 5 years.

Claim.—As an improvement in the devices for transmitting power, the pulleys B, C, provided with a series of double grooves, and pulley D, in combination with the rope A wound thereon double throughout, substantially as described, whereby are attained a strong strength with a smaller rope, capacity to pass smaller pulleys, and a divided strain on the splice, as set forth.

No. 28,821. Railway Gate.

(*Barrière de chemin de fer.*)

John A. Lidback, Portland, Me., U.S., 5th April, 1888; 5 years.

Claim.—1st. In a gate mechanism, the combination, of an upright cylinder, a duplex piston and a gate-arm pivoted to the cylinder frame or support, and connected with the piston between its heads, by means substantially as described. 2nd. In a gate mechanism, the combination of an upright cylinder, a duplex piston, a rack, a gear and gate-arm pivoted to the cylinder frame or support, substantially as described.

No. 28,822. Barrel Heater.

(*Écure de tonnerrie.*)

Amos Himo, Rockford, Ill., U.S., 5th April, 1888; 5 years.

Claim.—The herein described drum, closed at the top and open at the bottom, provided with flues extending from its bottom upwardly, the said flues communicating with the interior of the drum at the bottom and with the open air at their upper ends, substantially as set forth. 2nd. The herein described drum, closed at the top and open at the bottom, provided with flues extending from its lower end upwardly along its outer face, the said flues communicating with the interior of the drum at the bottom, and with the open air at their upper ends, substantially as set forth. 3rd. The combination, with the interior or heating drum, and a suitable support for the same, of the removable outer drum, provided with vertical flues opening into the space between the drums at the bottom, and to the open air at the top, and means for elevating and lowering the said outer drum, substantially as set forth.

No. 28,823. Car-Coupling.

(*Attelage de chars.*)

James N. Martin and W. Hamilton Harris, Newberry, S.C., U.S., 5th April, 1888; 5 years.

Claim.—1st. In a car-coupling, the draw-head having a recess and slot provided with a spring latch, a bearing having a pivoted dog provided with a jaw, said dog also having a spring and a screw for connecting the bearing jaw and spring together, as shown and described. 2nd. In a car-coupling, the draw-head having a recess and a slot in its body portion communicating with each other, a latch consisting of a block having an arm engaging the recess and slot, the dog pivoted to a bearing of the draw-head having a spring, said dog also provided with a pivoted jaw, said latch also provided with a spring, and said dog adapted to engage the latch automatically and hold thereto in the recess, substantially as shown and described. 3rd. A car-coupling consisting of the draw-head having a recess and a slot communicating with each other, a latch consisting of a block seated in said recess, said block provided with a spring arm engaging the slot, a spring jaw having a dog engaging the latch, said dog pivoted to a bearing of the draw-head, said jaw also provided with a coupling pin on its outer end, and the arm of the latch provided with a lever, substantially as described.

No. 28,824. Fire-Arm and Cartridge Magazine therefor.

(*Arme à feu et cartouchière.*)

Charles G. Harston, Toronto, Ont., 5th April, 1888; 5 years.

Claim.—1st. In breech loading fire-arms, the combination of a rising and falling breech block having a carrier C actuated by a breech block lever, for conveying a cartridge on the breech block into the chamber of the gun, with a hopper magazine K, with lever P actuated by the breech block lever and connected to a door Q, so that, after the descent of the breech block and the extraction of the empty cartridge case, the door is opened and a cartridge is delivered from the magazine, and is pushed into the gun chamber by the carrier, substantially as herein described. 2nd. In a cartridge hopper, the combination of a door Q, for allowing the top cartridge to pass out, with a lever P, actuated by the breech action for opening the door, a lever W, actuated by the lever P, for ejecting the top cartridge and propelling it so as to pass into the gun chamber, and a pin S, for retaining the second cartridge while the top one is being ejected, substantially as herein described. 3rd. In a cartridge hopper, the combination of a lever P, actuated by the breech action of the gun, with a pin S for retaining the second cartridge, a plate T, a lever U, connected to plate T and serving to impart a rapid motion to a lever W, for propelling the top cartridge into the gun chamber, substantially as herein described. 4th. In a cartridge hopper, the combination of a forwardly inclining top and door Q, an inclined propelling lever W, actuated by a lever P, and an incline K on the front end of the hopper, for imparting to the top cartridge the proper direction for propelling it into the gun chamber, substantially as herein described. 5th. In a cartridge hopper, the combination, with mechanism for delivering a cartridge into the gun, of a propelling lever, or equivalent propelling device, situated within the hopper, for conveying the cartridge directly into the gun chamber, substantially as herein described. 6th. In combination with the rising and falling breech block of a gun, a carrier pivoted to the breech block and actuated by the ordinary breech block lever, so as to automatically convey a cartridge situated on the breech block into the gun chamber, substantially as herein described. 7th. In combination with the breech block of a gun, a carrier lever C, pivoted at its lower end to the breech block A, a carrier head G, having a slotted connection with the carrier lever C and with the block A, and a link F connected at one end to a slot in the carrier lever, and at the other end to the breech block lever E, substantially as herein described with reference to Figs. 1 to 7 of the drawings. 8th. In combination with the breech block of a gun, carriers C, working in slots A of the breech block, and links F connected at one end to slots in the carrier levers, and at the other end to the breech block lever E, substantially as herein described with reference to Figs. 8 and 9 of the drawings. 9th. In a rising and falling breech block having a carrier lever C, connected to the breech block lever E, a notch for the breech block lever to work in, having shoulder b, c and e, operating substantially as and for the purposes herein set forth. 10th. In combination with a gun having a rising and falling breech block, and a fore end magazine, spring shutters

r, v, for retaining the cartridges in the magazine, and an extractor *I* acted upon by the rising and falling breech block, for extracting the cartridges from the magazine, substantially as herein described. 11th. In combination with a gun having a rising and falling breech block worked by a lever, sliding extractor bars *J* with hooked ends *J*₁ and bows *J*₂, actuated by fingers *E*₁, on the lever *E*, for the extraction of the empty cartridge cases, substantially as herein described.

No. 28,825. Hay Sling. (*Embrassage à foins.*)

George Lindner, Chetopa, Kan., and Henry Lindner, Bay City, Mich., (assignee of John M. Hart, Oswego, Kan.) U.S., 6th April, 1888; 5 years.

Claim.—1st. In a hay and grain sling, the combination of the bars *A, B*, the U-shaped rods *C, D*, attached to the bars *A, B*, and the locking-rod *E*, pivoted to the bond of the rod *D*, the slotted casing *F*, attached to the bar *D*, the spring hold latch *G*, pivoted in the casing *F*, the trip-rope *I*, attached to the latch *G*, the ropes *J* attached to the ends of the bars *A, B*, and provided with the knots *K*, and the coupling-hook *L* engaging the ropes *J*, substantially as shown and described. 2nd. In a hay and grain sling, the bars *A, B*, provided with ropes *J* at the ends, the U-shaped rods *C, D*, attached to the bars *A, B*, respectively, the locking rod *E*, attached to the loop of the rod *D*, and the latch *G*, pivoted to the bar *B*, all combined for operation substantially as and for the purposes set forth.

No. 28,826. Paper Perforator.

(*Perforateur à papier.*)

John F. Ellis, (assignee of Louis P. Bouvier), Toronto, Ont., 6th April, 1888; 5 years.

Claim.—1st. A revolving roller *B*, having one or more rows of projecting pins *a* arranged longitudinally upon its periphery, in combination with a revolving roller *D*, having one or more rows of holes *b* arranged longitudinally upon its periphery, to correspond with the row of pins *a*, and receive the said pins as the rollers revolve, substantially as and for the purpose specified. 2nd. A revolving roller *B*, having one or more adjustable metal strips *A* inserted in it, as shown, and having a row of projecting pins *a*, in combination with the revolving roller *D*, having one or more adjustable strips *C* inserted in it, which strip or strips has a series of holes *b* made in it, to correspond with the pins *a*, substantially as and for the purpose specified. 3rd. The strip *C*, inserted into the revolving roller *D*, and having a series of holes *b* to correspond with, and receive the pins *a*, inserted in the revolving roller *B*, in combination with the slot *d* and holes *e*, substantially as and for the purpose specified.

No. 28,827. Trolling Spoon Bait.

(*Cuiller-amorce de trole.*)

Warren M. Brinkerhoff, (assignee of John R. Harlow), Auburn, N.Y., U.S., 6th April, 1888; 5 years.

Claim.—1st. A trolling spoon having a seat for the bill or point of the fish hook, and a slot at or near one end through which the hook may protrude when struck by a fish, substantially as described. 2nd. The combination, with a trolling spoon provided with a slot at or near one end, and a seat for the bill or point of the hook to rest against, of a spring actuated hook secured to the reverse of the spoon, substantially as described. 3rd. A trolling spoon fish-hook comprising a spoon, a fish-hook yieldingly secured to one side of the spoon with the main part of its body exposed to the strike of the fish, and its point seated against the opposite face of the spoon, so as to prevent the hook from catching or entangling with obstructions as it is drawn through the water, substantially as described. 4th. A trolling spoon provided with a slot at or near one end, through which the hook may protrude, said hook being actuated by a spring power to throw the point of the hook toward the spoon, substantially as described. 5th. An artificial bait provided with a spring actuated hook, the force of said spring tending to throw the point of the hook towards the body of the bait, substantially as described.

No. 28,828. Machinery for Measuring, Marking, Plicating and Packaging Textile Fabrics. (*Machine à mesurer, marquer, plier et emballer les draps.*)

The Fabric Measuring and Packaging Company, (assignee of Edward P. Watson, administrator of the estate of Peter H. Watson), New York, N.Y., U.S., 6th April, 1888; 5 years.

Claim.—1st. The combination of mechanism, substantially as described, for ascertaining and indicating to the eye of the attendant the lineal measure of a piece of textile fabric while in an outspread but unstretched condition, with mechanism, substantially as described, for receiving the fabric as it leaves the measuring mechanism and plicating it lengthwise, and mechanism, substantially as described, to receive the plicated fabric as it leaves the pleator and make it up into a package, substantially as specified. 2nd. The combination of mechanism, substantially as described, for ascertaining the lineal measure of a piece of textile fabric and registering the same upon it while in an outspread but unstretched condition, with mechanism substantially as described, for receiving the fabric as it leaves the measuring and registering mechanism and plicating it lengthwise while it passes, and mechanism, substantially as described, for making it up into a compact package, the several mechanisms being part of one machine and co-operative to produce the result, substantially as described. 3rd. The combination of mechanisms, substantially as described, for ascertaining the lineal measure of a piece of textile fabric and registering the measuring upon the same while it is in an outspread but unstretched condition, with mechanism, substantially as described, for drawing said fabric through the machine and making it up into a package, substantially as described. 4th. The combination of measuring, plicating and packaging mechanisms, substantially as described, with an adjustable tension device located between the measuring and plicating mechanisms, whereby the

fabric is subjected after being measured to a strong tension that it may plicate smoother and more evenly, and may wind into a more compact package, substantially as described. 5th. The combination of a draft roll, a fabric support, and mechanism for drawing the fabric through the machine in contact with said draft roll, with a measuring shaft, pulleys on said measuring shaft and the shaft of the draft roll respectively, a belt connecting said pulleys, and mechanism for registering the measurement of the fabric as indicated by the revolution of said measuring shaft, substantially as described. 6th. The measuring shaft *S* and draft roll *B*, in combination with differential regulating pulleys on said shaft *S* and the shafting of the draft roll, and a driving belt for said pulleys, whereby the motion of the draft roll is transmitted to the measuring shaft and differentiated, substantially as described. 7th. The combination of the draft roll *B*, measuring shaft *S* and cone regulating pulleys *b, b*₁, with the belt *b*₂ and adjustable belt guide, substantially as and for the purpose specified. 8th. The combination of the plicating side bars *e*, the fingers *F*, the means whereby the fingers *F* are supported at their bases and adjusted, substantially as described, smoothing roll *H* and winding mechanism with the tension regulating and equalizing bar *e*₁ and springs *e*₂, substantially as described. 9th. The combination of the tapering and triangularly arranged side bars *e*₁, meeting at their small ends and forming an apex *e*₃, and a base-bar *e*₂ to which the side bars are attached by their bases, and by which they are united and upheld with correspondingly tapered fingers *F*, and adjustable connections securing said fingers to the base-bar, to uphold them and permit their bases or their small ends, or both, to be adjusted toward or from each other, or raised or lowered, whereby the co-operating converging plicating surfaces of the fingers and side bars shall support the cloth by surfaces at and all round the apex, to insure the formation of an even unwrinkled fold without undue strain of the cloth, substantially as described. 10th. The combination of the triangularly arranged side bars, the finger guides and the smoothing roll with a carriage, a slideway to support the carriage, as described, during the process of plication, whereby the plies of the fold may be regulated in width and laid more evenly together, substantially as described. 11th. The combination of a triangular pleator having conical sides, which converge to a point and form an apex to bear against and distend the crease of the fold, with conical finger guides converging to substantially the same apex, the fabric under plications being allowed to pass around and between the said finger guides, substantially as described. 12th. The combination of a triangular folding plate or frame with the finger guides *F*, and means to adjust them, as described, whereby their forward ends may be set nearly together to support the cloth firmly at and near the crease, whereby a smooth and unwrinkled fold may be made white farther from the crease the space between the guides widens, to avoid unnecessary pressure and friction against the passing cloth while giving it sufficient guidance, substantially as described.

No. 28,829. Production of Fire-Proof Materials and Articles. (*Production de matières et objets incombustibles.*)

Alexander Feldmann, Linden, near Hanover, Germany, 6th April, 1888; 15 years.

Claim.—1st. The production of fire proof materials from one or more of the fluorides of sodium, of calcium, of magnesium, of strontium, of barium and of aluminium, and one or more of the basic oxides, lime, magnesia, baryta, strontia, alumina and oxide of zinc, by comminuting the substances, by mixing them with the addition of water and forming thereof a dough, and by drying and burning the same, substantially as hereinbefore described. 2nd. The production of fire-proof articles from one or more of the fluorides of sodium of calcium, of magnesium, of strontium, of barium and of aluminium, and one or more of the basic oxides, lime, magnesia, baryta, strontia, alumina and oxide of zinc, by comminuting the substances, by mixing them with the addition of water and forming thereof a dough by moulding the latter and by drying and burning the articles thus produced, substantially as specified. 3rd. As an article of commerce, the fire-proof materials, consisting substantially of a burnt compound of one or more of the fluorides of sodium of calcium, of magnesium, of strontium, of barium and of aluminium, and of one or more of the basic oxides, lime, magnesia, baryta, strontia, alumina and oxide of zinc, in quantities by weight corresponding to the chemical combining weights, as herein set forth.

No. 28,830. Washing Machine.

(*Machine à blanchir.*)

Samuel C. Logan, New Glasgow, N.S., 6th April, 1888; 5 years.

Claim.—1st. The combination of the clothes receptacle *A* and a frame *C*, to swing or rock, as set forth. 2nd. The clothes receptacle *A*, having a cover *B* at top, and provided internally with rings or breaks *G*, in combination with a frame *C*, to rock or swing, as set forth.

No. 28,831. Method of Making and Seaming Stove-Pipes. (*Art de fabriquer et d'agrafer les feuilles des tuyaux de poêles.*)

Esdra Rousseau, Montréal, Qué., 6th April, 1888; 5 years.

Claim.—1st. La combinaison de l'agrafe *h* et de l'échancrure *c*, cette dernière s'introduisant dans l'agrafe *h* et l'oreille *b*, tel que décrit. 2nd. La combinaison de l'agrafe *c* avec l'agrafe *f* et le pli *o*, tel que ci-dessus décrit et pour les fins indiquées.

No. 28,832. Clothes Pin. (*Épingle d'étenlage.*)

Solon E. Moore, Swanton, Vt., U.S., 7th April, 1888; 5 years.

Claim.—As an improved article of manufacture, the clothes pin described, consisting of the two clamps having the fulcrum recess on their inner sides, about midway of their length, the line grooves in the bevelled jaws, and the transverse grooves *a* on their outer sides in rear of the said line-grooves, and the spring composed of a single

wire coiled at D, with the tangential arms E at opposite ends of the coil, with angular branches F at their outer ends, to engage the sides of the clamps and prevent lateral displacement thereof, and the terminal parallel branches G oppositely directed to engage the grooves on the outer sides of the said clamps, substantially as specified.

No. 28,833. Oil Cup. (*Godet à huile.*)

Edward P. Shaffor, Rochester, N Y., U.S., 7th April, 1888; 5 years.
Claim.—The combination, with the oil cup, having the upwardly projecting annular boss or ring, with slots of varying depth in its upper edge, of a rod or plunger extending through the cup and into the outlet passage provided with the pin or projection thereon resting in the said slots, and the removable cap or cover for limiting the upward movement of the rod or plunger, substantially as described.

No. 28,834. Stove Hole Cover.

(*Couvercle de trou de poêle.*)

Harry C Baker, Chicago, Ill., U.S., 7th April, 1888; 5 years.
Claim.—1st. The combination, with the cover provided with a circular recess in its upper face and with apertures in the bottom of said recess, of independent slide plates mounted in said recess and adapted to cover said apertures, whereby said apertures may be opened or closed independently of each other, substantially as set forth. 2nd. The combination, with the cover A, provided with a circular recess a in its upper face, with apertures a¹ in the bottom of said recess, and with an annular recess a², of the slide plates B, B¹, each provided with a flange b, and said plates arranged in said recesses, as shown, and the keeper plate secured to plate A, and its margin projecting out of or the flanges b on said slide plates, substantially as set forth. 3rd. The combination, with the recessed and apertured cover A, provided with the annular groove a³, of the slide plates mounted in the recess in said cover, and provided with flanges b¹ in the r margins, which rest in said groove a³, substantially as set forth. 4th. The combination, with the slide plate B, provided with the step-like flange b on its inner margin, of the cover A, properly recessed, as described, to receive said flanged plate, said step-like flange serving to strengthen said plate and prevent it from warping. 5th. The cover A, provided with pendent projections a⁴, three or more on its outer margin, whereby an air space is provided around the edge of the cover, said projections also serving as chipping pieces, substantially as described. 6th. The combination of the cover A, provided with the recesses and apertures, substantially as described, the slide plates mounted on said cover and in said recesses, the keeper plate C, the attaching screw e and the recessed nut c¹, whereby said keeper plate may be conveniently removed. 7th. The combination of the cover A, provided with recesses a, a¹, in its upper face, with apertures a², and with a guide flange a³ at its margin, of the slide plates B, B¹, mounted in the said recesses, and a removable keeper plate C, secured to said plate A, and projecting over the inner ends of said slide plates, substantially as set forth. 8th. The combination of the recessed cover, provided with apertures a¹ and with stops a² extending radially across the recess between said apertures, of the sliding plates mounted in said recess between said stops, substantially as set forth. 9th. The combination of the recessed cover A, provided with two sector-shaped apertures a¹ and two radially-arranged rib-like stops a², which divide the recess a into two parts, of the two sector-shaped plates B, B¹, mounted one in each part of said recess a, and means for retaining said plates in the recesses in the cover, substantially as set forth. 10th. The recessed cover, provided with apertures a¹ and with guide ribs a², a³, on its lower face, arranged substantially as and for the purposes set forth.

No. 28,835. Cycle and Velocipede.

(*Velocipède.*)

Francis Bourk, London, Ont., 14th April, 1888; 5 years.
Claim.—In a cycle or velocipede, the combination, with the wheel A, axle B having a pinion D, and the fork C extending below the axle, of the arm or bracket E, supported by the fork, a spur-wheel F journaled on said bracket, and upward projecting bar G, pivoted to the bracket and carrying the pedal H, and provided with clutches I, or blocks or pawls, and a spring J having one end attached to a projection from arm E, and the other end attached to the bar G, substantially as shown and specified.

No 28,836. Morse Key with Multiple Contacts. (*Manipulateur dit "de Morse" à contacts multiples.*)

David Kunhardt, Aachen, Germany, 7th April, 1888; 5 years.
Claim.—A Morse key, with multiple contacts for simultaneously transmitting one and the same telegram to several stations, said key consisting of a pivoted lever bearing on its upper surface, metallic blades a¹, a², a³, a⁴, forming part with or connected to the transmitting contact-points d¹, d², d³, and rest or silent contact-point e¹, e², e³, on the lower surface of the key, the current from the batteries I, II, III being conducted to said blades a¹, a², a³, a⁴, by means of elastic metal blades 1, 2, 3, and the contacts e¹, e², e³, and a¹, a², a³, obtained by spring-blades to effect a reliable and simultaneous contact for every line, the said key being also provided with a spiral spring to obtain the rest or silent contact, and a shunt or shunts being arranged to exclude the several lines as convenient, all substantially as described and for the purpose set forth.

No. 28,837. Wear Plate for Railways.

(*Plaque de garde pour chemins de fer.*)

John W. Currier, North Troy, Vt., U.S., 9th April, 1888; 5 years.
Claim.—1st. In a wear plate of the character described, a body having one or more flanges projecting from its lower side and adapted to be driven into the tie, said flanges being corrugated, substantially

as and for the purpose set forth. 2nd. In a wear plate, the body A provided with the end flanges a, substantially as shown and described. 3rd. In a wear-plate, the flange t having the end r curved or bent laterally inward, substantially as described. 4th. In a wear-plate, the flange s, having its end r curved or bent laterally outward, substantially as set forth. 5th. In a wear plate, the flanges t, f, having their adjacent ends r curved or bent laterally in opposite directions, whereby said flanges are adapted to take a firmer hold of the tie, and thereby offer greater resistance to the lateral movements of the rail, substantially as described. 6th. The improved wear plate hereinbefore described, the same consisting of the body A, having the upwardly projecting flanges x and holes z, downwardly-projecting corrugated flanges t, f, s, and spurs k, all being constructed and arranged substantially as shown and specified.

No 28,838. Car Mover.

(*Levier de mise en mouvement des chars.*)

Lord B. Gifford, Toledo, Ohio, U.S., 9th April, 1888; 5 years.
Claim.—1st. In a car mover, an angle plate, fulcrum plates pivoted thereon by means of slotted hangers, being held in adjustment by a movable bolt, and a leg pivoted to the fulcrum plates, having the direction of its inclination changed by the different adjustments of the fulcrum plates, as and for the purpose set forth. 2nd. In a car mover, an angle plate, movable serrated plates connected thereto, a hook connected by flexible attachments to a block adjustable upon the serrated plates, and a lever pivoted to the angle plate and connected with the serrated plates, as and for the purpose set forth. 3rd. In a car mover, an angle plate, fulcrum plates connected therewith, having a leg pivoted thereto, composed of telescopic sections, as and for the purpose set forth.

No. 28,839. Two-Wheeled Vehicle.

(*Voiture à deux roues.*)

Frank W. Bowno, Lincoln, Neb., U.S., 9th April, 1888; 5 years.
Claim.—1st. The combination, with a side bar provided with studs having spherical heads, of sectional links arranged for connection with said heads, and other heads also held by the links and arranged for connection with a vehicle body, substantially as described. 2nd. The combination, with a vehicle body having opposite slots in its sides near the forward ends, studs adjustable vertically in said slots, and studs at the rear ends of the sides, of the spring supported side bars having inward projecting studs at or near their front and rear ends, and link connecting said body and side bar studs, substantially as set forth. 3rd. The combination, with a vehicle body, of spring suspended side bars, spherical headed studs carried by the side bars, sectional links held upon the stud heads, and other spherical headed links connected to the side bars and engaged by the lower ends of the links, substantially as described. 4th. The combination, with a vehicle body, of side bars, spherical headed studs carried thereby, sectional links engaging with the stud heads, fixed spherical headed studs secured at the rear of the vehicle body and engaged by the rear links of the side bars, and other spherical headed studs that are adjustably connected to the forward portion of the vehicle body and engaged by the lower ends of the forward side bar links, substantially as described.

No. 28,840. Bicycle Lantern.

(*Lanterne de vélocipède.*)

Frank P. Prindle and Charles H. Koyl, Washington, D. C., U. S., 9th April, 1888; 5 years.
Claim.—1st. The method employed for preventing the swinging of the lantern of a moving bicycle, which consists in counterbalancing the lantern by means of a weight that is connected therewith, and is located at a point above the suspensory bearing of the same, substantially as and for the purpose specified. 2nd. The method employed for preventing the swinging of the lantern of a moving bicycle, which consists in counterbalancing the lantern by means of a weight that is connected therewith, is located at a point above the suspensory bearing of said lantern, and is capable of adjustment toward and from the same, substantially as and for the purpose shown. 3rd. As an improvement in bicycle lanterns and in combination therewith, a weighted arm which is secured to, and extends from, a lantern above its suspensory bearing, substantially as and for the purpose set forth. 4th. As an improvement in bicycle lanterns and in combination therewith, an arm which is secured to, and extends from, a lantern upward above its suspensory bearing, and is provided with a weight that is adapted to be adjusted lengthwise of said arm, substantially as and for the purpose shown and described. 5th. As an improvement in bicycle lanterns and in combination therewith, a weighted arm, which is connected with a lantern and is located principally above the suspensory bearing of the same, substantially as and for the purpose specified. 6th. As an improvement in bicycle lanterns and in combination therewith, a counterbalancing weight, which is combined with a lantern at a point above its point of suspension, substantially as and for the purpose shown. 7th. As an improvement in bicycle lanterns and in combination therewith, a counterbalancing weight, which is combined with a lantern at a point above its point of suspension and is adjustable toward or from said point, substantially as and for the purpose set forth. 8th. As an improvement in bicycle lanterns and in combination therewith, a weighted counterbalancing arm, which is adapted to be connected with, or disconnected from, a lantern and, when connected therewith, is mainly located above the suspensory bearing of the lantern, substantially as and for the purpose shown and described.

No. 28,841. Clothes Rack. (*Séchoir à linge.*)

James O. Road, Antwerp, N.Y., U.S., 9th April, 1888; 5 years
Claim.—A clothes rack consisting of the bracket portion A and B, hinged together horizontally and provided with a hook C and eye C¹, and the fingers D, pivoted to the movable portion of the bracket, substantially as set forth.

No. 28,842. Heating Stove. (*Poêle de chauffage.*)

Henry Tilden, Minneapolis, Minn., U. S., 9th April, 1888; 5 years.

Claim.—1st. In combination, in a heating stove, a fire-chamber, a superimposed drum, an intermediate hollow grate, a partition dividing said drum, except the upper portion thereof, into front and rear compartments, escape flues connected with said rear compartment near its top and bottom dampers in said flues, a draft regulator for controlling the openings in the rear portion of said grate, and pipes in said rear portion of said grate, and pipes in said fire-chamber, and drum communicating with the hollow of said grate for the convection of air through the stove, substantially as set forth. 2nd. In combination, in a heating stove, a fire-chamber, a superimposed drum, an intermediate hollow grate, a partition dividing said drum, except the upper portion thereof, into front and rear compartments, escape flues connected with said rear compartment near its top and bottom dampers in said flues, a draft regulator for controlling the openings in the rear portion of said grate, pipes in said fire-chamber, and drum communicating with the hollow of said grate and fire bricks arranged in said drum compartments to form a devious draft passage therein, substantially as set forth.

No. 28,843. Heating Stove. (*Poêle de chauffage.*)

Henry Tilden, Minneapolis, Minn., U. S., 9th April, 1888; 5 years.

Claim.—1st. In a heater, the combination of a combustion chamber, a superimposed drum, a partition in said drum for creating an upward draft in one portion, and a downward draft in another portion thereof, a hollow grating between said chamber and drum, air-inlets leading into the passage of said grate and ducts in said chamber, and drum connected with the air-space of said grate for the convection of air through said heater, substantially as set forth. 2nd. In a heater, the combination, with a fire-chamber and superimposed drum, of an intermediate hollow grate, a zig-zag draft passage above said grate formed in said drum by irregular courses of fire bricks, and ducts in said chamber and drum communicating with the air-space of said grate, substantially as and for the purpose set forth. 3rd. The combination, in a heating stove with a combustion chamber and superimposed drum, of an intermediate hollow grating, an air heater in the lower portion of the combustion chamber, pipes connecting said heater and grate, and pipes leading thence through said drum, substantially as set forth. 4th. In a heating stove, the combination, with a combustion chamber and superimposed drum and an intermediate hollow grating, of a partition extending upward from said grate into said drum for creating an upward draft in one portion of said drum, and a downward draft in the other portion thereof, a devious draft passage formed of fire brick in said drum and pipes in said combustion chamber, and drum communicating with said hollow grating, substantially as and for the purpose set forth. 5th. In combination, in a heating stove, a combustion chamber, a superimposed drum, an intermediate hollow grate, a partition dividing said drum, except the upper portion thereof, into front and rear compartments, an escape flue connected with the lower portion of said rear compartment, draft openings in the lower portion of said partition, a damper for controlling the same, and pipes in the combustion chamber, and drum communicating with the hollow of said grate, substantially as set forth. 6th. The combination, in a heating stove having a fire chamber, a drum, and an intermediate hollow grating, of a partition dividing said drum, except the upper portion thereof, into front and rear compartments, an escape flue near the base of said rear compartment, draft openings in the lower portion of said partition, a damper for controlling the same, pipes in said fire chamber, and drum communicating with the hollow of said grate for the convection of air through the stove, and fire bricks arranged in said drum to form a devious draft passage therein, substantially as set forth. 7th. In a stove having a combustion chamber, a drum and an intermediate hollow grating, the combination, with said hollow grating and combustion chamber, of the ring G and pipes F, substantially as and for the purpose set forth. 8th. In a heating stove, the combination of the air receiver and heater D having inlets *di* and outlets *di*, the pipes *f* and the removable stove bottom E, having air inlets *ei*, all constructed and arranged substantially as set forth.

No. 28,844. Machine for Raising Panels for Doors, etc. (*Machine à relever les panneaux des portes, etc.*)

George Dickson, St. Thomas, Ont., 10th April, 1888; 5 years.

Claim.—1st. The combination of the cutters K, K and the collars *c, c, c, c*, substantially as and for the purposes hereinbefore set forth. 2nd. The combination of the bridge B and the guides *a, a*, substantially as and for the purpose hereinbefore set forth.

No. 28,845. Button. (*Bouton*)

William J. Leckie, jr., Boston, Mass., U. S., 10th April, 1888; 5 years.

Claim.—1st. A button comprising a body provided with an exteriorly screw-threaded shank, a washer disposed on said shank, and a disk having a screw-threaded hole adapted to receive said shank, substantially as set forth. 2nd. In a button, the combination of the body A having the screw-threaded shank B, the washer C disposed on said shank, the disk D having a centrally disposed screw-threaded hole for the reception of the shank B, and the locking truck N secured in a socket formed partially in the shank, substantially as described. 3rd. A button comprising a body provided with an exteriorly screw-threaded shank, a washer disposed on said shank, a disk having a screw-threaded hole adapted to receive said shank, and means for detachably locking the disk to the shank, substantially as set forth. 4th. In a button of the character described, the shank B and disk D, provided with the socket *f*, having the enlargement *z*, in combination with the metallic truck N expanded in said socket, substantially as set forth. 5th. In a button of the character described, the metallic truck N disposed in the socket *f*, said truck being expanded in said socket and provided with the indentation *d*, substantially as

specified. 6th. In a button of the character described, the combination of the body A, shank B, washer C, disk D and truck N, said truck being secured in a socket formed in said disk and shank and partially bisected, substantially as and for the purpose set forth. 7th. In a button of the character described, the combination of the body A, shank B, washer C, disk D and truck N, said shank and disk being provided with the socket *f* having the enlarged portion *z*, and said truck secured by being expanded in said socket and provided with the cut *i*, for weakening the same, substantially as set forth.

No. 28,846. Hollow Mast. (*Mât creux*)

James W. Mansfield, Boston, Mass., U. S., 10th April, 1888; 5 years.

Claim.—1st. A hollow mast whose shell is made of a number of longitudinal strips secured together around internal supporting rings placed at intervals in the interior of the mast, substantially as described. 2nd. A hollow mast whose shell is composed of longitudinal strips gouged out between the joints to form a corrugated interior, substantially as and for the purposes described. 3rd. A hollow mast whose shell is made of two or more longitudinal strips, the inside joints of which are covered with suitable material, such as prepared strips of cloth and paper, as and for the purpose substantially as described. 4th. The herein described process of making a hollow mast consisting of, first, winding the shell with a spiral coating of cloth, then winding over the cloth a coating of paper, and, lastly, coating the whole with waterproof material, substantially as described. 5th. The herein described process of making a hollow mast consisting of, first, forming a shell of two or more longitudinal strips, winding said shell with a spiral coating of cloth treated with a compound of white lead and glue, and then winding over the cloth a coating of paper treated with said compound, and lastly, coating the whole with waterproof material, substantially as described. 6th. The herein described process of making a hollow mast consisting of forming the shell in longitudinal strips, covering the joints on the inside of said shell with suitable material, winding the outside of the shell, first, with a spiral coating of cloth, and then with a coating of paper, and lastly, covering the whole with waterproof material, substantially as described. 7th. A hollow mast consisting of a shell covered with an inner spiral coating of cloth, an outer coating of paper and suitable waterproof material, substantially as described. 8th. A hollow mast consisting of a shell covered with an inner spiral coating of cloth treated with a compound of white lead and glue, a coating of paper treated with said compound, and an outer coating of waterproof varnish, substantially as described.

No. 28,847. Filtering Machine.(*Machine à filtrer.*)

James A. Crocker, New York, N. Y., U. S., 10th April, 1888; 5 years.

Claim.—1st. A single shell or casing having heads secured to its ends, in combination with a water passage *d* at each end, of decreasing width from the hub to the strainer in cross-section taken in a vertical plane passing through the axis, and of increasing length from the hub to the strainer in cross-section, taken in a vertical plane at right angles to the axis, in order that a passage of uniform and equal area may be provided from the inlet of the water at the hub, to its outlet at the strainer, as and for the purpose described. 2nd. A filtering machine having but a single shell or casing A, with its entire exterior surface closed at all points except at its ends or heads B, each of which is provided with a pair of openings *di*, in combination with a pair of strainers D and a pair of covering plates E, substantially as set forth. 3rd. An improved filtering machine possessing the following elements in its construction, to wit: a single shell or casing having at each end a pair of hollow diametrically opposite heads, each provided with a water passage, the dimension of which measured horizontally in a direction longitudinal with the casing increases from its periphery toward the centre of the filter, while the dimension of said passage measured horizontally in a direction transversely with the casing decreases from the periphery to the centre of the filter, each hollow head having a port, which, as the casing is revolved, becomes alternately an inlet or an outlet port, a hollow hub provided with two diametrically opposite ports and integral with, or secured to, the casing, so as to revolve in common therewith, a hollow stationary journal having three ports, and two series of horizontal perforated pipes, open from end to end, and located diametrically opposite each other, and extending between the correspondingly located water passages, all constructed and arranged substantially as and for the purpose specified. 4th. A cylindrical casing formed of plates of boiler iron rivetted together and rotated on a horizontal axis, in combination with heads of cast iron secured thereto, as described. 5th. As an improvement in filtering machines, the single shell or casing having its exterior closed at all points, except at a pair of openings *di* in each head, and formed of two sections having their inner ends abutting each other, in combination with strainers D and covering plates E for the openings, one or more rings or annular bands *l*, for covering the joint formed by the abutting sections, and suitable bearing for the outer bands to turn on, constructed for operation substantially as specified. 6th. A single shell or casing of cylindrical form, having a head B, provided with a pair of openings *di*, closed by a pair of covering plates E, the inner edges of which are bolted to the head, and their outer edges to strips *di*, rivetted to the cylindrical rim of the casing, in combination with strainers entered at, and removed from said openings, as set forth. 7th. In combination with the inner walls of the double heads of the filter casing, and the perforated pipes open throughout their length, the collars *m* abutting against their ends and bolted or screwed to the inner walls for keeping the pipes in position, substantially as described. 8th. In combination with a series of horizontally located perforated pipes D, and the single shell or casing of a filtering machine, the support G, with its openings *pi* and flanges *li* rivetted thereto, as set forth. 9th. A strainer frame curved in cross-section, and a corrugated strainer D also curved in cross-section, to adapt it thereto, in combination with two series of braces *n*, for supporting the corrugated strainer, substantially as specified. 10th. In combination with the strainer frame and inner walls of the heads, a clamping plate I screwed to the latter, to prevent the longitudinal

movement of the strainer frame, and a pair of longitudinal rails it for preventing its lateral movement, constructed to operate substantially as described.

No. 28,848. Animal Trap. (*Piège.*)

Tony Alexander, Bogus Chitto, Miss., U.S., 10th April, 1888; 5 years.

Claim.—1st. In an animal trap, the combination, with pivoted catches adapted to engage and lock the prongs or jaws in place, of a platform provided with arms pivoted on the said catches and serving to disengage the said catches from the prongs or jaws, substantially as shown and described. 2nd. In an animal trap, the combination, with the prongs or jaws, of hing-d catches adapted to engage the said prongs or jaws, and a platform provided with arms pivoted on the said catches, the arms engaging one side of the prongs, so as to push the catches off the prongs when the animal steps on the platform, substantially as shown and described. 3rd. In an animal trap, the combination, with a base provided with upwardly extending pivots, of prongs fulcrumed on a post held on the said base, a spring for operating the said prongs, catches fulcrumed on the said pivots on the base, and a platform provided with arms pivoted on said catches, substantially as shown and described. 4th. In an animal trap, the curved prongs or jaws C, substantially as shown and described. 5th. In an animal trap, curved prongs or jaws, a post on which the said prongs or jaws are fulcrumed, a base supporting the said post, and a spring operating on the said prongs or jaws, in combination with arms hinged on the said base, a top cross-plate held on the said arms, and catch arms projecting from the said plate and adapted to engage the top edges of the said prongs or jaws, substantially as shown and described. 6th. In an animal trap, the combination, with curved prongs or jaws, of teeth held to slide on the said prongs, but being prevented from turning, substantially as shown and described. 7th. In an animal trap, teeth held to slide on the prongs or jaws, but being prevented from turning thereon, substantially as shown and described.

No. 28,849. Vehicle Wheel. (*Roue de voiture.*)

Elias A. Seale and Wiley W. Downing, Brewton, Ala., U.S., 10th April, 1888; 5 years.

Claim.—1st. The combination, with the collar, having a series of radial slots therein, of the spokes adapted to be inserted at the inner ends in the said slots, and having shoulders at thereon, to engage the inner edge of the collar and the threaded outer ends, and the rim having a series of openings tapped thereon adapted to receive the ends of the spokes, substantially as and for the purpose specified. 2nd. The combination, with the collar, of the spokes at their inner ends therein, and having threaded outer ends, and the rim having a series of tapped openings therein, to receive the threaded ends of the spokes, the extremities of the said spokes, which project beyond the outer side of the rim being braided, as and for the purpose set forth. 3rd. In a wheel, the combination, with the box or sleeve A, threaded on the outer side of the collar D secured thereon, and having the inner ends of the spokes secured thereto, the thimble F screwed on the sleeve on the inner side of the collar, the thimble G screwed on the sleeve on the outer side of the collar, and cap L screwed on the end of the sleeve to cover the top on the end of the spindle which passes through the sleeve, substantially as specified. 4th. In a wheel, the combination, with the exteriorly threaded sleeve or box A, of the collar D surrounding said sleeve and having the annular recess B and the radial recesses or slots D communicating therewith, the spokes E, secured at the inner ends in the said slots and having the lateral arms C, to engage in the annular recess, and the thimbles C and I, to be screwed on the sleeve A, on opposite sides of said collar to hold it in place, substantially as specified. 5th. In a wheel, the combination, with the sleeve A, of the collar D, secured thereon and having the annular recess B, and the radial slots D communicating therewith, and the spokes E, inserted at the inner ends in the said slots, and having the lateral arms C, to engage in the annular recess, and the shoulders E, C, on opposite sides to engage the inner edge of the said recess, substantially as and for the purpose specified. 6th. In a wheel, the combination, with the sleeve or box A, of the collar D having the radial slots D in the outer side, to receive the inner ends of the spokes, the washer H, to bear against the outer side of the collar and conceal the ends of the spokes, and the thimbles C and I screwed on the sleeve A, on opposite sides of the collar, to bind the same and the washer H firmly in position, substantially as and for the purpose specified. 7th. In a wheel, the combination, with the exteriorly threaded sleeve A, of the collar D surrounding the sleeve and having the interior annular recess B, and the radial slots D communicating therewith, the spokes E secured at the inner end in the said slots, and having enlargements to engage in the said annular recess, the washer H to bear against the outer sides of the spokes, and the tapers thimbles C and I, to screw on the sleeve A, on opposite sides of the collar to bind the same and the said washer together, substantially as and for the purpose specified. 8th. In a wheel, the combination, with the exteriorly threaded sleeve or box A, of the collar D, having the inner ends of the spokes secured therein, the inner thimble C and outer thimble I, and the cap L secured on the end of the sleeve and having the oil reservoir M therein, communicating with the bearing of the wheel, substantially as and for the purpose specified. 9th. The combination, in a wheel, with the box or hub screw threaded at the outer end, of the cap L screwed thereon and having the partition or web I therein, provided with a perforation l, and the opening m in the side, provided with a screw cap mt, all constructed and arranged as and for the purpose specified. 10th. In a wheel, the combination of the exteriorly threaded box or sleeve A, the thimble C screwed thereon and having the flared outer end forming the shoulder c, and the inward extending flange e on the inner end, the collar D, bearing against the shoulder c, and having the inner ends of the spokes secured thereto, the thimble I, screwed on the sleeve and having the flared inner end forming a shoulder s, to bear against the outer side of the said collar, and the cap or oil cup L, screwed on the end of the sleeve, over the end of the spindle extending through the said sleeve, and having the opening m in the side thereof, to receive the oil to lubricate the journal, substantially as and for the purpose specified.

No. 28,850. Process for Smelting Iron Ore.

(*Procédé de fusion du minerai de fer.*)

Thomas Barrow, Montreal, Que., 10th April, 1888; 5 years.

Claim.—A process of smelting iron ore by means of heat and mineral oil gas, substantially as described and for the purpose set forth.

No. 28,851. Seam Finisher for Sewing Machines. (*Finsseuse de machine à coudre.*)

William H. Ganss, Toledo, Ohio, U.S., 10th April, 1888; 5 years.

Claim.—1st. The combination, with the double hammer guide, of the adjustable gauge-plate having an upper angular shoulder, a lower rectangular shoulder and an intermediate lip to enter between the folded edges of two pieces of fabrics, whereby the intumed edges are separated and carried out of line with each other at a proper regulated distance, substantially as specified. 2nd. The combination, with the flat plate carrying the double hammer guides, and the upwardly projecting slotted bracket, of the gauge plate provided with guide shoulders and a separating lip, and the set screw working with the bracket slot, whereby said plate may be adjusted, substantially as specified.

No. 28,852. Device for Operating Street Water Cocks. (*Appareil pour actionner les bornes fontaines.*)

Frank Moses, Toronto, Ont., 10th April, 1888; 5 years.

Claim.—1st. In a device for operating street water cocks, the combination, with the stop cock and water pipes, of a rod in rigid connection with the valve, adapted to turn therewith and extending therefrom to the street level, and a pipe or tube joined to the valve shell and surrounding said rod, substantially as and for the purpose specified. 2nd. The combination, with the valve shell A and spigot C, of the vertical rod E, rigidly connected to said spigot, tube D, joined to said shell, and an outer surrounding tube or casing K, whereby close connection is made between stop-cock and street level, for the purpose described. 3rd. The combination, with shell A, spigot C, washer c, and nut c', of the cap A', for the purpose specified.

No. 28,853. Water Closet. (*Latrines à l'eau.*)

Philip G. Hubert, New York, N.Y., U.S., 10th April, 1888; 5 years.

Claim.—1st. The combination, with a soil or waste pipe, of a closet basin or bowl comprising in one structure, a soil receptacle with a discharge outlet, and a flushing reservoir or cavity arranged behind the soil receptacle and to deliver through the soil receptacle, the closet or bowl being mounted on trunnions or pivoted to swing and discharge, first, the contents of the soil receptacle or cavity, and then the contents of the flushing receptacle or cavity through the soil receptacle or cavity, substantially as herein described. 2nd. The combination, with the soil or waste pipe and trap A, of a basin or bowl having an outlet arranged to discharge into the trap, and provided with the partition c, having its lower edge sealed in the water and forming in front of it the soil receptacle or cavity, and behind it the flushing reservoir or cavity, the basin or bowl being mounted on trunnions or pivoted to swing and discharge its contents, and a water supply pipe and valve for supplying clean water to the basin or bowl, substantially as herein described. 3rd. The combination, with an upwardly presented branch of the waste trap A, of the basin or bowl C, mounted on trunnions and having a partition c, forming on one side the soil receptacle c', having a discharge nozzle C' adapted to enter the branch of the trap, and on the other side, behind the soil receptacle, the flushing reservoir c'', which communicates with the soil receptacle, through the opening c' and the supply pipe, and a controlling valve for delivering water to the flushing reservoir substantially as herein described.

No. 28,854. Carriage Wheel. (*Roue de voiture.*)

Samuel D. Forbes, Wilmington, Del., U.S., 10th April, 1888; 5 years.

Claim.—1st. The combination of a spoke having a tenon broad in the plane of the wheel, and a felly having a long mortise to fit said tenon, substantially as shown and described. 2nd. The reel-shaped spoke described being broad at its outer end in the plane of the wheel, and broad at its inner end in the plane of the wheel's axis. 3rd. A wheel spoke broad at its outer end in the plane of the wheel, and thin transversely thereto, and having a tenon to enter the felly. 4th. A wheel spoke provided with a tenon to enter a felly, and having broad shoulders beside the tenon in the direction of the plane of the wheel for the felly to rest on, and narrow shoulders at the other sides of the tenon. 5th. A spoke broader at its outer end in the plane of the wheel than its thickness in a direction at right angles thereto, and provided with a tenon similarly proportioned and having a tenon on its inner end whose greatest breadth is in the direction of the wheel's axis, substantially as shown and described. 6th. A spoke broader shouldered at its outer end in the plane of the wheel than in the direction at right angles to the said plane, as described.

No. 28,855. Secondary Electric Battery.

(*Batterie électrique secondaire.*)

Jean T. Van Gestel, New York, N.Y., U.S., 11th April, 1888; 5 years.

Claim.—1st. An electrode for a secondary battery consisting of a perforated lead tube filled with active material, or material adapted to become active, through which passes a copper or other conductive wire, as and for the purpose herein set forth. 2nd. An electrode for a secondary electric battery consisting of a perforated lead tube filled with active material, or material adapted to become active, through which passes a lead covered metallic conducting wire, substantially as and for the purpose hereinbefore set forth. 3rd. The combination

of a perforated lead tube filled with active material, and a metallic conducting wire traversing the same, substantially as set forth. 4th. In an electrode for a secondary electric battery, the combination of a perforated lead tube filled with finely divided lead, and a lead covered metallic conducting wire inserted within the tube, substantially as and for the purpose herebefore set forth.

No. 28,856. Meter for Measuring Water and Gas. (*Compteur à eau et à gaz.*)

James Davies, Wednesbury, Eng., 11th April, 1888; 5 years.

Claim.—1st. The improvements in meters for measuring water or other fluids, consisting of the solid cylinder having passages in its side, and a disc plate working therein, substantially as herein set forth. 2nd. The construction of disc E, hollow from sheet metal stamped or pressed, as and for the purpose herein set forth. 3rd. In water meters, the employment of vulcanite compressed paper, or other such like material, in the manufacture of the disc. 4th. In disc water meters, the mode of hanging the disc upon the centre pin F, or equivalent ball, so as to reduce the friction thereof. 5th. In disc water meters, the equalizing of the pressure on each side of the disc plate by means of the small hole z, substantially as set forth. 6th. In disc water meters, the mode of reducing the speed of the shaft a, before communicating with the indexing mechanism, by means of the worm gearing inside the casing A. 7th. The mode of making the pipe connection or joint by means of a split ferrule and nut applied outside thereof, substantially as set forth. 8th. The mode of constructing the strainer by means of a perforated sheet, with the collar cast thereon to bind the whole together. 9th. In disc meters, the mode of reducing the friction upon the edge of the disc against the division plate F, means of an internal lever or broadening shoe c. 10th. In disc meters, the mode of compensating for wear of thrust by the adjustable bearing W, substantially as set forth. 11th. In disc meters, the device V shown by Figs. 7, 15 and 16, for holding the disc to its work.

No. 28,857. Method of Moulding Car Wheels. (*Mode de moulage des roues de chars.*)

Joseph J. Carr, Wilkes Barre, Penn., U. S., 11th April, 1888; 5 years.

Claim.—1st. The means for forming moulds for casting car wheels or other objects comprising the combination of a flask F, extension I, a pattern and moulding material distributed with an excess of said material at certain parts to have approximately the shape of the pattern, substantially as described. 2nd. A method of moulding car wheels or other objects, consisting in distributing and shaping sand or other moulding material contained in a suitable flask, to approximate in form the contour of the object moulded, with an excess of moulding material in such parts of the mould as contain the greater depth of the said moulding material, and then compressing said material to the required uniform density, in the manner described. 3rd. The means for moulding car wheels or other objects comprising the combination of a suitable flask and moulding material distributed throughout said flask, with a surface contour approximating to the shape of the pattern but having an excess of moulding material in certain parts proportionate to the depth of said material in the mould and to the pressure necessary to compact it, and patterns adapted to be used, in the manner specified. 4th. The means for moulding car wheels or other objects comprising the flask F, extension I, moulding material with an excess graduated proportionate to the depth of material in the mould, and the patterns adapted to define and compress it for use, in the manner herein specified. 5th. Means for forming moulds for casting car wheels or other objects comprising the combination of a suitable flask, sand or other moulding material distributed and shaped with reference to its final form, with such excess of sand in parts as will equalize the pressure, and patterns adapted to compress the sand a certain amount relative to the face of the mould, substantially as described. 6th. As a means for moulding car wheels, the flask F, with its bottom shaped like the face of the mould, sand equally distributed over said bottom, and the patterns H and I, for use in the manner herein specified. 7th. Means for moulding car wheels comprising the combination of a flask containing sand distributed to equalize the pressure required to compact it, and then the pattern I, having ribs or blades g, and the rim z, substantially as described and for the purpose specified. 8th. Means for moulding car wheels comprising the combination of the flask F, containing sand distributed proportionate to its depth in the mould and to the pressure required to compress it, and the pattern I and pattern H, adapted to operate substantially as described. 9th. Means for moulding car wheels comprising the combination of a flask containing sand distributed to approximate to the contour of the pattern and to equalize the pressure necessary to compress it to its final form, the pattern I consisting of the rim and ribs or other projecting parts of the wheel, and the pattern H consisting of the core-print hub and plate, the whole adapted to be used and manipulated substantially as herein described. 10th. Means for moulding car wheels comprising a flask containing sand distributed to equalize the pressure applied to compact it, the pattern I with rim z, extension I, ribs or blades g, and pattern H having slots h, adapted to be used substantially as described. 11th. A method of moulding car wheels consisting in pressing a pattern of the rim and ribs or arms into and upon a bed of sand distributed to approximate the form of one side of the wheel, and then defining and compacting the remainder of the sand by pressing upon it, while still holding the rim and rib pattern, a pattern of the core-print hub and plate, and then withdrawing the rim and rib pattern, and finally removing the hub and plate pattern. 12th. A method of moulding car wheels consisting of distributing and shaping moulding material to produce a surface contour corresponding to the shape of the wheel, but with an excess in certain parts to compensate for the difference in mould depth and to equalize the pressure required to compact the material, applying a pattern to imprint the protruding portions of the wheel without compressing the sand to any great extent, and then applying another pattern in conjunction with the first pattern to define and compact the mould.

No. 28,858. Cable Coaster, Carrier and Ferrer. (*Appareil de transport à câble suspendu.*)

Jacob Van Zandt, Syracuse, N. Y., U. S., 11th April, 1888; 5 years.

Claim.—1st. The combination, with the standard A, of the traveller D, constructed with a frame composed of sides and front and rear cross bars, the front cross bar carrying pulleys bearing against the front of the standard, the rear cross bars carrying pulleys bearing against the rear of the standard, and a draft bar mounted upon a front and a rear cross bar of the frame, and provided with an eye in the front end to receive the end of the cable, and intermediate eyes 8 to receive the ends of adjusting rope substantially as described. 2nd. A traveller consisting of a frame composed of sides and front and rear cross bars, pulleys mounted upon said cross bars, and a draft bar mounted upon the cross bars and provided with eyes 8 and 9, substantially as described. 3rd. The combination, with the car, of the guide rolls erected between the platforms and impinging against the sides of the car, substantially as described. 4th. The combination, with the cable and car dependent from a carriage mounted thereon, of a platform slotted longitudinally to permit the vertical adjustment of the car and cable through the slot, substantially as described. 5th. The combination, with the cable and car dependent from a carriage mounted thereon, of two platforms vertically above each other, and both slotted longitudinally to receive the car, substantially as above described.

No. 28,859. Pianoforte. (*Piano.*)

Hiram B. Nickerson, New Bedford, Mass., U. S., 11th April, 1888; 5 years.

Claim.—1st. In a stringing and tuning device for stringed instrument, a differentially threaded bushing piece centrally apertured and threaded for the tension screw c of the instrument, and circumferentially threaded for engagement with the straining abutment, substantially as described. 2nd. A stringing and tuning device for stringed instruments consisting of a differentially screw-threaded bushing piece, a screw-threaded tension screw to which the strings of the instrument may be attached, and a screw-threaded straining abutment, the whole arranged and adapted to operate substantially as shown and described. 3rd. The straining or tension plate of a pianoforte provided with a series of slots for a part of the instrument strings, and with a cross or T-shaped head piece in which the tension screws of the instrument are seated, substantially as shown and set forth. 4th. In a stringing and tuning device for stringed instruments, consisting of a differentially threaded bushing piece centrally apertured and threaded for the tension screw of the instrument, and circumferentially threaded for engagement with the straining abutment, the tension screw perforated laterally at a suitable distance from its lower end, and provided with a groove in one side, and centrally apertured in its lower end for the string, said aperture leading out to one side at a point below the lateral aperture, as and for the purpose described. 5th. In combination with the tension devices in a pianoforte, a piece of metal or other suitable substance apertured to loosely enclose the string end of said tension device, said aperture provided with grooves in its sides, for the purpose described. 6th. In combination with a pianoforte, the viola sounding chamber having openings in its front, substantially as shown and described. 7th. In a pianoforte, a supplementary soft pedal motion arranged in such a manner that the hammer rail will retain the position of its farthest movement until released, as described. 8th. The straining or tension plate of a pianoforte deflected rearwardly at its top, and then thrown forward to form an arc of a circle, when centre shall be the bridge over which the strings are drawn, in which are the tension devices a, seated, substantially as shown and described. 9th. In a pianoforte, a sounding board attached to the straining abutment and projecting upwardly, substantially as set forth.

No. 28,860. Bustle. (*Tournure.*)

Christy M. A. Campbell, Ottawa, Ont., 11th April, 1888; 5 years.

Claim.—1st. In a bustle, the outer band A and the inner band B, connected with each other and having the bow c pivotally attached between them by the pivot l, substantially as herein shown and described. 2nd. In a bustle, the spring bar E secured to the crossed lapped ends of the outer and inner bands A and B, said bar having formed in it the hook f and spring k, substantially as herein described and for the purposes set forth.

No. 28,861. Secondary Battery.

(*Batterie secondaire.*)

Otis C. Flick, Brooklyn, N. Y., U. S., 11th April, 1888; 5 years.

Claim.—1st. In an element or electrode for secondary batteries, a plate or support composed of a conductive but non-active permanent alloy of lead and tin, containing about 17 per cent. of tin, substantially as described. 2nd. An element or electrode for secondary batteries consisting of a conductive but non-active plate of permanent alloy of lead and tin, containing about 17 per cent. of tin, and active material held on the surface or in grooves, apertures or recesses of said plate, substantially as herein shown and described. 3rd. A plate, element or electrode for secondary batteries composed of conductive material and being a support for active material, and having a lug formed thereon, provided with screw-threads for mounting and connecting it in the cell, substantially as shown and described. 4th. The combination, with a plate electrode or element composed of conducting material and being a support for active material, and having a screw-threaded lug, of binding screw on said lug, for mounting the plate and connecting it in the cell, substantially as shown and described. 5th. A plate electrode or electrode for secondary batteries composed of a metal or alloy not affected injuriously by the exciting liquid of the battery, which plate has points or portions of pure metallic lead extending through, or partly through, said plate, substantially as herein shown and described. 6th. The herein described method of making electrodes for secondary batteries consisting in casting

or placing pure metallic lead into apertures, cavities or recesses, or upon the surface of a plate composed of metal or alloy that is not affected injuriously by the exciting liquid of the battery, then converting the pure metallic lead into a carbonate of lead, or other salt, or oxide of lead, and then converting said converted pure metallic lead into lead of a spongy or granular nature while held in the cavities or apertures or upon the surface of the plate, substantially as shown and described. 7th. In the manufacture of electrodes for secondary batteries, the improvement consisting in applying pure metallic lead in solid pieces on or in the plate at intervals, by casting or forcing, and then converting said metal by suitable stops into lead of a granular or spongy state, substantially as shown and described. 8th. A plate or element for secondary batteries consisting of a plate formed of an alloy of lead and tin, and provided with a coating of spongy or metallic lead produced by converting the lead of the alloy into a lead oxide, and then reducing it into metallic lead, substantially as shown and described. 9th. The combination, in an electric battery cell, of a series of plates arranged in a concentric circle and in alternate opposite polarity, substantially as described. 10th. The combination, in an electric battery cell, of a series of plates coupled through the cover of the cell with the connecting wires, and said cover having screw-threads and a shoulder connecting it with the jar for tight closure of the cell, substantially as described. 11th. The combination, in an electric battery cell, of the tight covering cover, the connecting rings placed one within the other on the cover, the line of alternate perforated connecting branches of said rings, and the series of plates of alternate opposite polarity connected through said cover and rings, substantially as described. 12th. The combination, with the plates, each having a shouldered and screw threaded lug formed thereon, of the cell cover, connecting rings and the elastic packing between the cover shoulders of the plates, substantially as described. 13th. The combination with the cell having the recess in the cover, connecting rings located therein, and the plates connected with the rings through the cover of the layer of non-conducting material cast in the recess of the cover to insulate the connections, substantially as described. 14th. The combination of the radially notched insulator with the concentric circle of plates, said insulator being arranged within the circle of plates and receiving the inner edges of the plates in its notches, and having a support and a conical top, substantially as described.

No. 28,862. Plume for Decorating Horses, etc. (*Panache pour chevaux, etc.*)

Henry D. Jackson, Matteawan, N.Y., U.S., 11th April, 1888; 5 years.

Claim.—1st. A plume having a standard composed of two parts hinged together, and a stiffener surrounding the joints and permitting a slight yielding of the latter, substantially as and for the purpose described. 2nd. The combination with the plume having a standard composed of two parts hinged together, of the coil-spring for holding the plume upright and lowered, substantially as set forth. 3rd. The combination with the plume having a standard made of two parts hinged together, and the compressible stiffener, of the bearing-washer located at one end of the stiffener and presenting a bearing surface for the fingers to obtain a purchase upon, substantially as described. 4th. The combination with the plume having a standard composed of two parts hinged together, of the compressible stiffener surrounding said joint for strengthening it and holding the plume upright, and adapted to press upon one of the parts on each side of the pivotal connection and hold the plume lowered or folded, substantially as set forth.

No. 28,863. Rubber Eraser. (*Caoutchouc à effacer.*)

William Friend, New York, N.Y., U.S., 11th April, 1888; 5 years.

Claim.—1st. A rubber eraser consisting of rubber stretched and sprung on the outer edge of a centre-piece, said rubber being bevelled in such a manner as to give its periphery a sharp edge, substantially as shown and described. 2nd. In a rubber eraser, the combination of the rubber A, edge a, centre-piece B, groove b, flange C and face c, substantially as shown and described.

No. 28,864. Punching Machine for Making Slots in Metallic Gas Tips. (*Dé-coupoir pour faire les encoches aux becs à gaz.*)

James B. Hogan and Charles Salter, (assignees of William Caroy), Montreal, Que., 11th April, 1888; 5 years.

Claim.—In a punching machine for making slots in metallic gas tips, the inclined punches I, J, moving into guides M and having proper cutters Q, R, the same being operated by the connecting rods E, F, shaft B, loose pulley A and clutch Z, the whole mounted on the standards C, C' and frame L, with the firmly secured die O, to the base X, and adjustable clamps P, P', all as above described and for the purposes set forth.

No. 28,865. Fireproof Partition. (*Cloison incombustible.*)

Thomas Bailey, New York, N.Y., U.S., 11th April, 1888; 5 years.

Claim.—1st. The combination, in a fireproof roof, partition or ceiling, of the reversely bent and alternately dove-tail ribbed and grooved metallic sheets, the metallic studs of the partition or supporting joints of the ceiling inserted through the sheets transversely to the ribs and grooves, and fire clay or other plaster coating, substantially as described. 2nd. The combination, for a fireproof roof, partition or ceiling, of the reversely bent and alternately dove-tail ribbed and grooved metallic sheets, metallic studs of the partition or supporting joints of the ceiling inserted through the sheets transversely to the ribs and grooves, end flanges of the studs and fire clay or other plaster covering, substantially as described.

No. 28,866. Pattern for Moulding. (*Patron de moulage*)

Joseph J. Carr, Wilkes Barre, Penn., U.S., 11th April, 1888; 5 years.

Claim.—The within described pattern for use in moulding a wheel, said pattern comprising a portion A with hub, rim and slotted web connecting the two, and portion B with ring having depending fingers, all substantially as specified.

No. 28,867. Stock Car. (*Char à bestiaux*)

George D. Burton, New Ipswich, N. H., U.S., 11th April, 1888; 5 years.

Claim.—1st. In a stock car, the main body provided with stalls at the end of the car, in combination with series of stalls in the central portion of the car, the said stalls being provided with feed troughs at the open ends, substantially as described, whereby the stock will stand face to face on opposite sides of the space, substantially as specified. 2nd. In a stock car, the main body provided with stalls, and sliding troughs situated at the open ends of the said stalls, substantially as described, whereby the loading of the car is effected by backing the stock into the stalls. 3rd. In a stock car of the character described, the combination of the main car body, the stalls situated therein and troughs at the rear of said stalls, substantially as and for the purposes hereinbefore described. 4th. In a stock car, the main body provided with stalls, in combination with hitching cables and troughs at the rear of said stalls, substantially as and for the purpose specified. 5th. In a stock car of the character described, the main body having stalls at each end, which are provided with troughs at their rear, and central stalls provided with troughs, which come directly in front of the troughs of the stalls at the ends of the car, in combination with doors provided with ventilators, which open into the aisle space between the troughs, all constructed substantially as described, whereby a ventilating current or draft may be secured directly through the car in front of the stock without liability of a direct draft on the rear sides of the stock, substantially as and for the purposes specified. 6th. In a stock car, the combination with the main car body, of the stalls located at either end and in the centre of the said car body, in such a manner that aisle spaces will be left between the end stalls and the centre stalls, and a communicating aisle between the said aisles. 7th. In a stock car of the character described, the main body provided with a series of stalls at each end, which are provided with troughs at their open ends, and central series of stalls located within the main body, in combination with an aisle space which extends along the central portion of the car, forming a clear and uninterrupted passage way from the feed trough of any animal within the car to the feed trough of any other animal within the car, substantially as and for the purposes specified. 8th. In a stock car, the combination of the series of stalls at each end of the car extending entirely across the same, and central series of stalls, the sides of which terminate a suitable distance from the side of the car, so as to leave a passageway between the end series of stalls, and a central partition dividing the central stalls into two series facing in opposite directions, feed troughs situated at the open ends of the said stalls, and aisle spaces between the end and the central stalls. 9th. In a stock car of the character described, the main body provided with a conical shaped tank, substantially as described, whereby the force of the momentum of the water as the car rocks laterally is counteracted, substantially as and for the purpose specified. 10th. In a stock car, the main body provided with a series of stock compartments, in combination with vertical hollow casings, and vertically sliding troughs provided with counterbalancing weights which slide up and down within the hollow casings, and connecting with the feed troughs by cables passing over pulleys, said casings being provided with vertical guides, substantially as and for the purposes specified. 11th. In a stock car, the main body provided with a series of stalls, in combination with vertical hollow uprights having a central partition, and sliding troughs provided with counterbalancing weights, which slide within said hollow guides, each side of the central partition within the guide, substantially as and for the purposes specified. 12th. In a car, the main body provided with diagonal braces at each end coming to a point at the bottom directly over the transom of the truck, and the inverted V in the centre of the sides of the car composed of two slanting timbers, and the upright timbers crossing the diagonal ones, in combination with the truss planks Z, Z' supported centrally by the truss rods a, all arranged substantially as shown and described. 13th. In a stock car, the main body having stock compartment and vertical sliding trough, in combination with a pivoted locking key having an inclined front, and a vertical rear face so that its lowermost extremity will be greater in diameter than its upper extremity, whereby the transom of the trough will crowd this key back, and the said key automatically return to its normal position when the transom has passed, in the manner and for the purpose herein set forth. 14th. In a car of the character described, the combination with the main body, of the vertical post D having a hood at the top central portion, and a perforation at its lower portion, one side of which post is adapted to receive a pipe passing from the water tank, and the other side serving as a conductor for foul air which enters through the perforation and passes up and out through the side of the post, substantially as described.

No. 28,868. Churn. (*Baratte.*)

Thomas J. Catchings, Taylor, Texas, U.S., 11th April, 1888; 5 years.

Claim.—The staff head c₁ having the slot c₂ narrowed from 1 to 2, and opposite inside grooves c₃, c₄, in combination with a dasher-stem head p, conforming to the recesses in the head, and carrying a spring in an upper cavity thereof, a plunger H having its top resting upon said spring and operative mechanism, substantially as described for the purpose set forth.

No. 28,869. Button Making Machine. (*Machine à faire les boutons.*)

John C. Schott, Providence, R.I., U.S., 11th April, 1888; 5 years.

Claim.—1st. In a button making machine, the combination with

the punch or device for pressing the parts of the button into union, of an expansible form for receiving the button or parts thereof and acting to expand or yield under the pressure of the punch, whereby the stress on the cloth may be relieved, substantially as and for the purpose herein described. 2nd. In a button making machine, the combination, with the punch and the die, of the vertically split expansion form or ring disposed within the die, and acting to expand to relieve the stress on the cloth of the button, substantially as and for the purpose herein described. 3rd. In a button making machine, the combination, with a swinging yoke, of a spring-pressed plunger reciprocating in the yoke, and a pivoted cam lever for engaging the head of the plunger for depressing the same, substantially as described. 4th. The combination, with the base-plate and the two posts mounted thereon, one of which is formed with a recessed head of the swinging yoke pivoted by one end to the head of one of said posts, and locking with its free end in the recess of the other post, the yoke formed with a depending sleeve and a spring-pressed plunger reciprocating in the sleeve, a lever pivoted to the yoke and formed with a cam projection for engaging the head of the plunger, substantially as and for the purpose herein described. 5th. In a button making machine, the combination, with the punch, of the spring form or ring 10, vertically split at 11 and acting to expand under action of the punch, substantially as described. 6th. The combination, with the punch and the die-bed 8, of the die-collar 9, the vertically split ring or form 10, and the pin 12 for loosely holding the ring in the collar, substantially as and for the purpose herein described. 7th. The combination, with the base-plate 7, the post 19, and the post 22 formed with recess 21, of the swinging yoke 18 pivoted by pin 33 to post 19 and formed with depending sleeve 23, the spring-pressed plunger 17 reciprocating in sleeve 23, and the lever 26 formed with the cam 27 having the hinge pin 28, substantially as and for the purpose herein described. 8th. The combination, with the base-plate 7 formed with the die-bed 8, the post 19 and the post 22 formed with the recess 21, of the die-collar 9 and the expansion ring 10 formed with split 11 and secured within the collar, the punch 13 provided with the sliding sleeve 14, the yoke 18 pivoted on pin 33 to post 19 and formed with the depending sleeve 23, the plunger 17 reciprocating in the sleeve 23 and provided with pin 25 and the spring 24, the lever 26 provided with cam 27 and pivoted on pin 28, substantially as described. 9th. The combination, with the punch and the die-bed 8, of the die collar 9, the expansible ring or form 10 formed with the vertical split 11, and adapted to lie within the said ring or form, substantially as and for the purpose herein described.

No. 28,870. Water Heater. (*Calorifère à eau.*)

Warden King, (assignee of Archibald Spencer,) Montreal, Que., 12th April, 1888; 5 years.

Claim.—1st. The combination in a fire-box casing, of the upper and lower rings of hollow form, and having inlets and outlets with central tubular portion composed of tubular form and bridge-pieces, the whole substantially as described. 2nd. The combination of the connection A having diaphragms D and H and openings k, with a furnace casing provided with an outlet g having diaphragm i arranged to close one side of the connection A, the whole substantially as described. 3rd. The combination of the furnace casing a b c, having outlet g, provided with diaphragm i, connection A having openings k, and diaphragms D and H with sections of a sectional boiler, the whole substantially as described.

No. 28,871. Spring Bed Bottom.

(*Sommeil à ressorts*)

Sidney E. Rugg, Rollag, (assignee of Frank W. Smith and George D. Livingston, Dodge Centre), Minn., U.S., 12th April, 1888; 5 years.

Claim.—In a spring bed-bottom, the combination, with the frame and springs, of a cover stretched over the springs, and folded at its corners, and hooks held in the corners of the frame and passed through the folds of the fabric of which the cover is made at the corners of the cover, substantially as shown and described.

No. 28,872. Trap for Sinks. (*Valve à évier*)

Joseph Côté and Joseph Richard, Montreal, Que., 12th April, 1888; 5 years.

Claim.—In a trap for sinks, the conical portion C with the closed cylinder F having tapering lugs I and strainer N, in combination with the portion J and sink D, the whole as above described and for the purposes set forth.

No. 28,873. Monkey Wrench. (*Cle à ferou.*)

The Lorain Wrench Company, Lorain, (assignee of Alphonso D. Gates, Cleveland,) Ohio, U.S., 12th April, 1888; 5 years.

Claim.—1st. A wrench consisting of a stock with an interior channel and an opening on one side, a handle and a fixed jaw in combination with a movable jaw, a screw rod extending through an orifice in the fixed jaw into the movable jaw, and a locking-piece entered through the head of the screw rod and engaging the inside of the fixed jaw with a plug to fasten the piece, substantially as set forth. 2nd. In a wrench, the stock and fixed jaw having a chamber and orifice, substantially as described, in combination with an adjusting rod having an L-shaped opening therein, an L-shaped locking piece in said opening, and a plug behind said piece in the axial part of the opening, substantially as set forth.

No. 28,874. Knitting Machine with Self-Acting Narrowing Apparatus. (*Machine à tricoter avec appareil automatique à rétrécir.*)

Julius Seyfert and Hermann Donner, (assignees of Albin Beyor,) Chemnitz, Germany, 12th April, 1888; 5 years.

Claim.—1st. A covering needle B having a groove x, and near to its

lower end a hole o, in combination with a latch needle a for the purpose of guiding and catching the hook a of the latch-needle, and for moving the latch needle to and fro by means of the covering needle. 2nd. The combination, substantially as before set forth, of the two rows of covering needles having a groove, and near to its lower end a hole, two rows of latched needles provided with feet, and the rocking frames d, d', d'', d³, d⁴, d⁵, with the levers p₁, p₂, the slide block p₁ and the slide bars r₁, R₁, by the action of which the hooks of the latch needles become coupled and uncoupled with the holes of the covering needles, and the latch needles become moved to and fro by means of the covering needles. 3rd. The combination, substantially as before set forth, of the two rows of covering needles, the two rows of latched needles, the two rocking frames d, d', d'', d³, d⁴, d⁵, on both sides of the machine, the levers d, d', d'', d³, d⁴, d⁵, the connecting rods q, q', and the lever c, c', for the purpose of oscillating the rocking frames on both sides of the machine at the same time. 4th. The combination, substantially as before set forth, of the two rows of covering needles, the two rows of latched needles, the rocking frames d, d', d'', d³, d⁴, d⁵, with the movable needle holders d', d'', and the slide K₉ with its arms K₁₁, K₁₂ for the purpose of moving sideways the two rows of covering needles at the time. 5th. The combination, substantially as before set forth, of the slide bars r₁, R₁, the levers r₂, r₃, R₂, R₃, mounted on rocking shafts r₅, R₅, the springs r₁₅, R₁₅ and the slide block e, for the purpose of laying on and lifting off from the needle beds the slide bars on both sides of the machine at the same time. 6th. The combination, substantially as before set forth, of the slide bars r₁, R₁, the levers r₂, r₃, R₂, R₃, the rocking shafts r₅, R₅, the levers r₄, r₅, R₄, R₅, the connecting rods r₂, R₂, and the levers r₁ for the purpose of moving up and down the slide bars r₁, R₁, on the needle beds on both sides of the machine at the same time.

No. 28,875. Oil Trap or Feed Water Grease Extractor. (*Appareil pour enlever l'huile de l'eau d'alimentation.*)

William D. Nelson and Henry D. Foote, San Francisco, Cal., U.S., 12th April, 1888; 5 years.

Claim.—1st. In a feed water, oil and grease extractor of the character described, the combination of the water inlet, a box filled with filtering material and screens to arrest the fibers or particles of the filtering material or other matters that pass beyond the filter, as set forth. 2nd. In a feed water, oil and grease extractor, the box N containing suitable filtering material, and provided with gratings C, the screens E and the frame 3, arranged and operated as set forth. 3rd. In a feed-water, oil and grease extractor, the combination, with the box 1, 2, 3, of the box N containing suitable filtering material, and provided with grating C, screens E, frame 3 and valve B, whereby the ports D, d can be opened and closed, and the hand screw L, all arranged and operating in the manner and for the purposes set forth.

No. 28,876. Anchor. (*Ancre.*)

Frederick W. Golder and Robert S. Munn, Harbor Grao, N.F.L., 12th April, 1888; 5 years.

Claim.—1st. The combination in an anchor, of a shank having an opening as described, a swinging arm having flukes pivoted, in said opening with pivot and end piece, the whole substantially as described. 2nd. The combination in an anchor, of a shank g having opening d, end piece f having inclines d', d'', slides having projections n, with pivoted and swinging arm g having flukes m, m', the whole substantially as described. 3rd. The combination, in an anchor, of a shank g having opening d, end piece f, slides having projections n, with pivoted and swinging arm g having flukes m, m', the whole substantially as described.

No. 28,877. Improvements in Clocks and Watches. (*Perfectionnements dans les horloges et les montres.*)

John H. Croil, Aultsville, Ont., (assignee of William J. Gage, New York, N.Y., U.S.), Alexander McCullough and John D. Colquhoun, Wales, Ont., (assignees of John H. Croil,) 12th April, 1888; 5 years.

Claim.—1st. In combination with a watch or clock, the shifting dial W and mechanism actuated by the works of the watch or clock for shifting it automatically in one direction and the other, twice in each twenty-four hours, substantially as herein specified. 2nd. In a watch or clock, substantially as described, having a second hand attachment, the combination, with the stationary dial R having apertures as r, and with the second-hand shaft s, of the movable dial W having different sets of figures, and having also the curved slots S, S', S'' and means for shifting said dial, as shown and for the purpose set forth.

No. 28,878. Apparatus for Inserting and Fixing the Bristles of Brushes, etc. (*Appareil pour poser les soies des brosses, etc.*)

Frederick J. Page and Charles F. Page, Norwich, Eng., (assignees of Jean V. Gano, Paris, France,) 12th April, 1888; 5 years.

Claim.—1st. In a machine such as described, the combination of the treadle J, lever J₁, provided with a stop j, engaging with a similar stop h on an arm H jointed to the lever G, and spring G₂ for the purpose of placing the friction cone F in or out gear with the driving pulley E, substantially as specified and shown in the accompanying drawings. 2nd. In a machine such as described, the inserter tube G constructed in two principal parts, such as g, g', with removable wearing parts g'', g''', held together by pins g₃ and sleeve g₄, substantially as specified and shown in the accompanying drawings. 3rd. In a machine such as described, the combination, with the inserter blade P, of a screw-threaded body, such as P', for the purpose of facilitating

ing the adjustment of the said blade, substantially as specified. 4th. In a machine such as described, the combination, with the single block L, of the two punches for cutting out the anchors, substantially as specified. 5th. In a machine such as described, the combination, with the abutment plate R, of the flexible lever R₂ its, pawls r₂ engaging with rack r₃, and the parts r₃, R₁₁ and R₁₂ for raising the pawls, the whole constructed and operating substantially as specified. 6th. In a machine such as described, the trident or apparatus for separating the fibres or bristles into layers, and consisting of a central prong such as T, to which is imparted only a reciprocating movement in a direction across the path traversed by the bristles, and two outer prongs such as t₁ and t₂ to which are imparted reciprocating movements both across and in the direction of the path of the bristles, substantially as specified. 7th. In a machine such as described, the combination, with the endless chain T₅, of a comb such as U to which is imparted the reciprocating movements, the one across and the other in the direction of the passage of the bristles or fibres, substantially as specified and shown in the accompanying drawings. 8th. In a machine such as described, the combination, with the rod V₁, of the bar V₂ having an incline or cam at one end for the purpose of placing the comb U out of gear when it is requisite to work the machine without feeding the fibres, substantially as specified and shown. 9th. In a machine such as described, the separator V and counter-separator V₁, in combination with the comb U, adjustable guides S and T₁, slide x and adjusting screw x₁, the whole arranged and operating substantially as and for the purpose specified. 10th. In a machine such as specified, the combination, with the nipping jaws K and K₂, of the trigger o₂, lever o₃, and spring o₄ actuating bell crank lever o₅ provided with stud o₁, to engage with fork of rod H, the whole constructed and operating substantially as and for the purpose specified.

No. 28,879. Timber Structure for Mines.

(Boisage des mines)

George J. Goodhue and Henry M. Wadleigh, Stevens Point, Wis., U.S., 12th April, 1888; 5 years.

Claim.—1st. In a timber structure for mines, the combination, with suitable logs beveled at their ends, of caps having their respective ends cut away to form beveled tongues, and upper and lower shoulders beveled to correspond with the bevels on the logs, substantially as and for the purpose set forth. 2nd. In a timber structure for mines, the combination, with suitable logs provided with gudgeons and reduced at their ends to form bevels, of caps cut away at their respective ends to form beveled tongues recessed to fit the gudgeons, and upper and lower shoulders beveled to correspond with the bevels on the logs, substantially as and for the purpose set forth. 3rd. In a timber structure for mines, the combination, with legs having beveled extremities and cut away to form circular gudgeons, of caps cut away at their respective ends to form beveled tongues recessed to fit the gudgeons, and upper and lower shoulders beveled to correspond with the bevels on the logs, substantially as and for the purpose set forth. 4th. In a timber structure for mines, the combination, with legs having beveled extremities cut away to form beveled tongues, and upper and lower shoulders beveled to correspond with the bevels on the logs, substantially as and for the purpose set forth. 5th. In a timber structure for mines, the combination, with the legs B having their extremities reduced to form the shoulders f and bevels g, of the caps C having their ends cut away to form the beveled tongues c, beveled shoulders b, b₁ and plain shoulders h, substantially as and for the purpose set forth. 6th. In a timber structure for mines, the combination, with the legs B having their extremities reduced to form the gudgeons a, shoulders f and bevels g, of the caps C having their ends cut away to form the recessed and beveled tongues c, beveled shoulders b, b₁ and plain shoulders h, substantially as and for the purpose set forth.

No. 28,880. Routing or Dadoing Tool.

(Rabot à ramure.)

Charles J. Woodsend and Archibald McAuslan, Galt, Ont., 13th April, 1888; 5 years.

Claim.—A cutter connected to the end of a movable or portable spindle, on which an adjustable collar is fitted, in combination with a sleeve loosely fitted around the spindle, and having feet or toggles formed on its end, substantially as and for the purpose specified.

No. 28,881. Window Sill. (Allège de fenêtre.)

Paul Fanda (assignee of Hynok Breuer), New Prague, Minn., U.S., 13th April, 1888; 5 years.

Claim.—1st. As an improved article of manufacture, a window sill made with a main plate A, and a front pendent wall plate or moulding B, and said plate A provided with a lip or flange C at its inner edge, and adapted to a groove in a window frame, substantially as herein set forth. 2nd. As an improved article of manufacture, a window sill, made with a main plate A, and a front pendent wall plate or moulding B, and web braces a at the angle of said plates A, B, and said plate A provided with a lip or flange C at its inner edge, substantially as described for the purposes set forth. 3rd. A window sill made with a main plate A, and a front pendent wall plate or moulding B, and said plate A provided with upwardly-projecting flanges G to which the window pillars may be bolted, substantially as herein set forth.

No. 28,882. Shingle and Sheet Metal Painting Machine. (Machine à peindre la bardeau et la tôle.)

George D. Armstrong and Grant E. Crumb, Belleville, Ont., 13th April, 1888; 5 years.

Claim.—1st. In a shingle painting machine, the combination of two or more frames 3, 4, each having two rollers 5, 5, and provided with a spring 6, and thumb-screw 7 to compress the rollers, the several

sets of rollers geared together to operate simultaneously, and two converging springs 17, 18, each provided with a roller 1^a to engage opposite edges of the shingles, and yielding to allow the shingle to pass from between one set of rollers to between the other set, as set forth.

No. 28,883. Machine for Covering Articles with Cloth or other Fabric having Ribs Raised on its Surface.

(Machine à couvrir divers objets en drap ou autres tissus cordés.)

John D. Ripson and George Proctor, Toronto, Ont., 13th April, 1888; 5 years.

Claim.—1st. A block or table, having a groove or grooves made in it, arranged relatively to each other in any form desired, into which the cloth is pressed so as to form ribs of any desired design on the surface of the cloth, when it has been placed on the article it is intended to cover, substantially as specified. 2nd. As a new article of manufacture, a piece of wood or other hard material, covered with cloth or other fabric having ribs raised on its surface, substantially as specified.

No. 28,884. Car-Coupler. (Attelage de chars.)

Francis L. McNab, Sturgeon Bay, Ont., 13th April, 1888; 5 years.

Claim.—1st. A draw-head A having a block B fitted within it, and actuated by a spring C, as described, in combination with the curved coupling-pin D connected to the pivoted bar E, substantially as and for the purpose specified. 2nd. A draw-head A having a block B fitted in it, a ledge fitted in it, a ledge M projecting from the top of the said block B, which is operated by the spring C, as specified, in combination with the curved coupling pin D connected to the pivoted bar E, and arranged substantially as and for the purpose specified. 3rd. A curved coupling pin D fitted into a curved hole made in the draw-head A, and connected to the pivoted bar E operated by a crank-bar F, in combination with the block B with its ledge M, spiral spring C and link L, arranged substantially as and for the purpose specified.

No. 28,885. Method of Making Button-Hole Strips. (Manière de faire les pattes à boutons.)

James Stone, Aurora, Ill., U.S., 13th April, 1888; 5 years.

Claim.—1st. The hereinbefore described mode of making button-hole strips, which consists in joining by their edges a series of long strips by sewing, leaving gaps unsewed at regular intervals, and then covering the strips transversely between the gaps, thereby forming a series of button-hole strips, substantially as and for the purposes specified. 2nd. The hereinbefore described mode of making button-hole, which consists in sewing together a series of long strip along their edges, leaving gaps unsewed at regular intervals, then covering the strips transversely between the gaps, and then binding the edges of the severed strips to form the finished button-hole strips, substantially as and for the purpose specified. 3rd. The hereinbefore described mode of making button-hole strips, which consists in sewing together long strips near their edges, leaving gaps unsewed at regular intervals, folding back the loose ends, and securing within the folds stiffening cords, and then covering the strips transversely between the gaps to form the button-hole strips, substantially as and for the purposes specified.

No. 28,886. Sand Moulding Machine.

(Machine de moulage en sable.)

George Guntz, Wilkesbarre, Penn., U.S., 13th April, 1888; 5 years.

Claim.—1st. In a moulding machine, the combination of a table having a hole or chamber, a pattern sliding in the said hole and unequally balanced arms pivoted to the table under the pattern, so that they may automatically follow and support it at two different elevations. 2nd. In a moulding machine, the combination of a rotatable table having a series of equidistant holes or chambers arranged radially about its centre, a pattern sliding in each hole, and unequally balanced arms pivoted to the table under each pattern, so that they may automatically follow and support them at two different elevations. 3rd. In a moulding machine, the combination of a table having a hole or chamber, a pattern sliding in the said hole, arms pivoted to the table under the pattern, so that they may support it at two different elevations, and weights secured to the said arms for automatically turning them on their pivots when the pattern is raised. 4th. In a moulding machine, the combination of a rotatable table having a hole or chamber, a pattern sliding in the said hole, arms pivoted to the table under the pattern, so that they may support it at two different elevations, weights secured to the arms for automatically turning them on their pivots when the pattern is raised, and stationary inclines for restoring the said arms to their original position, and lowering the pattern when the table is revolved. 5th. In a moulding machine, the combination of a table having a hole or chamber, a pattern sliding in said hole, unequally balanced arms pivoted to the table under the pattern, so that they may automatically follow and support it at two different elevations, and a hydrostatic cylinder for raising the pattern. 6th. In a moulding machine, the combination of a table having a hole or chamber, a moulding box resting on the table around the said hole, a pattern sliding in the hole of the table, a hydrostatic cylinder under the table for raising the said pattern, an anvil supported over the moulding box, a hydrostatic cylinder for lowering the anvil, pressure pipes, provided with a valve connecting with the two opposite ends of the said cylinders, so that the said pattern and anvil may simultaneously compress the sand between them in the moulding box, mechanism for revolving the table provided with a disengaging clutch, and continuously revolving cams operating the said valve and clutch intermittently and alternately at fixed intervals. 7th. In a moulding machine, the combination of a rotatable table having a hole or chamber

ber, a moulding box resting on the table around the said hole, a pattern sliding in the hole of the table, arms pivoted to the table under the pattern, so that they may support it at two elevations, a hydrostatic cylinder under the table for raising the pattern, an anvil over the moulding box, a hydrostatic cylinder for lowering and raising the anvil, pressure pipes connecting the opposite ends of the said cylinders, so that they work simultaneously in opposite directions, weights for automatically turning the supporting arms on their pivots, and holding the pattern raised up after its cylinder ceases to support it and the anvil has been raised, and stationary inclines for restoring the said arms to their original positions, and lowering the pattern when the table is revolved from under the anvil. 8th. In a moulding machine, the combination of a table, a moulding box resting on the table, a sliding anvil over the moulding box, a stationary guide for the anvil, a hoop surrounding the anvil, levers pivotally connecting the anvil with the hoop, and tappets secured to the guide and bearing on the free ends of the said levers for sustaining the said hoop when the anvil is raised. 9th. In a moulding machine, the combination of a moulding box, a sliding anvil over the moulding box, and a sliding hoop pivotally connected to the anvil, whereby the hoop becomes an extension of the moulding box prior to the descent of the anvil. 10th. In a moulding machine, the combination of a moulding box, a sliding anvil over the moulding box having brackets E, a stationary guide for the anvil, a hoop surrounding the anvil, the levers D pivoted to the said brackets, the links C connecting the levers with the hoop, and the tappets D' secured to the anvil guide and operating in connection with the free ends of the levers, as set forth. 11th. In a moulding machine, the combination of a revolvable table having a hole in its outer edge, a spring latch automatically engaging with the said hole in the table, a pattern sliding in a chamber in the table, a moulding box resting on the table circumjacent to the pattern, a hydrostatic cylinder under the table for raising the pattern, an anvil over the moulding box, a hydrostatic cylinder for lowering the anvil, pressure pipes, provided with a valve connecting the opposite ends of the said cylinders, so that they work simultaneously in opposite directions, mechanism for revolving the table, provided with a disengaging clutch, continuously revolving cams operating the said valve and clutch intermittently and alternately at fixed intervals, and a continuously revolving cam engaging with a projection on the latch withdrawing it from the hole when the table is about to revolve, and holding the said projection until the hole in the table has passed by the end of the latch. 12th. In a moulding machine, the combination of a reservoir for sand, provided with valves for delivering a measured charge from the upper to the lower part of the reservoir, levers pivotally connected to the said valves, and a continuously revolving cam operating positively upon the said levers and opening and closing the said valves at stated intervals. 13th. In a moulding machine, the combination of a revolvable table having a series of equidistant holes or chambers, a pattern sliding in each hole, moulding boxes resting on the table around the holes, a sand reservoir provided with a sand delivery valve over one of the moulding boxes, a sliding anvil over the next adjacent moulding box, two hydrostatic cylinders placed respectively under the pattern and anvil and over the anvil, a pipe connecting the opposite ends of the said cylinders, and provided with a pressure valve so that the said pattern and anvil may simultaneously compress the sand between them in the moulding box, a continuously revolving shaft and two cams secured on the said shaft for simultaneously opening the pressure and sand valves aforesaid at stated intervals. 14th. In a moulding machine, the combination of a revolvable table, a moulding box resting on the table, a sliding anvil for compressing the sand on top of the moulding box, and a stationary knife for cutting off the surplus compressed sand on top of the box as the table revolves. 15th. In a moulding machine, the combination of a revolvable table, a moulding box resting on the table, a sliding anvil for compressing the sand on top of the moulding box, and a vertically adjustable stationary knife for cutting off the surplus sand from the top of the box as the table revolves. 16th. In a moulding machine, the combination of a revolvable table provided with a central projecting stem, a stationary sleeve journaled on the stem, a stationary bracket secured at one side of the table and a knife provided with screws journaled in the sleeve and bracket, so that the vertical plane of the knife may be adjusted, as and for the purpose set forth. 17th. In a moulding machine, the combination, with a revolvable table, of a brush supported above the table, and in contact with its surface for clearing away the sand. 18th. In a moulding machine, the combination, with a revolvable table, of a revolving brush journaled in stationary boxes above the table, said brush being in contact with the surface of the table and for clearing away the sand. 19th. In a moulding machine, the combination, with a revolvable table, of a vertically adjustable revolving brush journaled in stationary boxes above the table, said brush being in contact with the table and for clearing away the sand. 20th. In a moulding machine, the combination of a revolvable table provided with a central projecting stem, a stationary sleeve journaled on the stem, a stationary bracket secured at one end of the table, vertically adjustable boxes provided with adjusting screws connecting them with the said sleeve and bracket, and a revolving brush journaled in the said boxes for clearing away the sand from the surface of the table. 21st. In a moulding machine, the combination of a revolvable table, a brush mounted on a central spindle journaled in stationary boxes above the table, and intermediate gearing connecting the brush spindle with the table, so that the brush may revolve simultaneously with the table and clear away the sand from its surface. 22nd. In a moulding machine, the combination of a revolvable table, a brush mounted on a central spindle journaled in boxes above the table, a friction wheel secured on a vertical spindle and bearing against the outer edge of the table, screws for adjusting the pressure of the friction wheel upon the edge of the table, and bevel gearing connecting the two spindles together, so that the brush may revolve simultaneously with the table, and clear away the sand from its surface.

No. 28,887. Shingle Feeding Gear for Shingle Machines. (*Engrenage d'alimentation des machines à bardeau.*)

John I. Lloyd, South Waterville, N.S., 13th April, 1888; 5 years.

Claim—An improved shingle feed, made with the crank C, connecting rod D, lever E and pivoted fulcrum B, combined and operated as herein described and for the purposes hereinbefore set forth.

No. 28,888. Apparatus for the Manufacture of Mono-Carbonate and Bi-Carbonate of Soda and Allied Products. (*Appareil de fabrication du mono-carbonate et du bi-carbonate de soude et de leurs alliages.*)

Milton R. Wood, Brooklyn, N.Y., U.S., 13th April, 1888; 5 years.

Claim—In an apparatus for the manufacture of mono-carbonate and bi-carbonate of soda or allied products, the combination of a lower primary vessel and one or more secondary vessels superposed one above another, and unobstructed and constantly open throats or passages connecting the top of each vessel with the bottom of the vessel next above, thereby adapting the vessels for containing substantially specific and limited bodies of liquor which will fill all the vessels except the upper one, and which through the throats or passages form in effect a single hydrostatic column, an inlet passage for liquor to one of the secondary vessels, and an agitator and coil for the circulation of a refrigerant arranged in one or more of the vessels, and a pipe for introducing gas into the primary vessel, whereby the gas is caused to ascend freely through the entire body of liquor in the vessels in succession and the entering liquor is free to rise with the gas, substantially as herein described.

No. 28,889. Shoe for Sleigh Runners. (*Ferrure de patin de traîneau.*)

George A. Stevens, Hartsville, Mass., U.S., 13th April, 1888; 5 years.

Claim—1st. As a new article of manufacture, a sleigh-shoe having a dovetail groove extending centrally and longitudinally of its upper face from a straight walled socket therein, and provided with a wrought metal bushing corresponding in contour with said groove and socket, and secured in the same in the process of casting the shoe, substantially as herein shown and described. 2nd. A sleigh shoe provided with a central longitudinal opening in its upper face having a base a, and side walls b, b', which walls for one portion of their length incline inwardly and produce a diminished space between their upper edges, and for another portion of their length are separated at their upper edges by a space as great as that between said walls at the plane of their bases, said opening having fitted therein a bushing of like contour, substantially as herein shown and described. 3rd. The combination, with a sleigh runner B, of a cast metal shoe D having a dovetail groove extending centrally and longitudinally of its upper face from a straight walled socket therein, a wrought metal bushing A of corresponding contour fitted in said groove and socket, and a bolt C having its head lying in said groove and its shank extending upward through the sleigh runner and held therein by a suitable nut, substantially as shown and described.

No. 28,890. Road Cart. (*Désob'igeante.*)

James A. Knapton, Parkhill, Ont., 13th April, 1888; 5 years.

Claim—1st. In a road cart, the springs E, E', in combination with the bars D, irons D', and axle C, substantially as shown and described and for the purpose specified. 2nd. The springs E, E', curved bars D, irons D', and axle C, in combination with the foot rest G, straps H, H, cross bar I, shafts A and seat F, substantially as shown and described and for the purpose specified.

No. 28,891. Harrow. (*Herse*)

James G. Bailey, New Glasgow, N.S., 13th April, 1888; 5 years.

Claim—1st. In a harrow, a tooth seat having an interior chamber for the reception and operation of the head of a fastening bolt, said chamber being provided with an oblong slot extending into it and through which the fastening bolt passes, substantially as described. 2nd. In a harrow, a tooth seat having an interior chamber or cavity provided with an oblong slot extending into the same, substantially as described. 3rd. A harrow tooth seat having an interior chamber or cavity provided with an oblong slot, in combination with a tooth and a fastening bolt passing through said slot and retained therein, substantially as described. 4th. In combination with a harrow tooth and fastening bolt, a seat provided with a cavity or chamber having a contracted oblong slot through which said bolt passes, whereby the head of the bolt is retained within said cavity or chamber, substantially as described. 5th. A tooth seat having an internal cavity, provided with an oblong slot having a transverse enlargement, whereby the tooth bolt is adjustably and removably secured to the seat, substantially as described. 6th. A tooth seat provided with an embossment upon its under side, in combination with a supporting frame provided with a recess for the reception of said embossment, and a device for fastening the seat to the frame, substantially as described. 7th. A tooth seat having a fastening bolt cast solid therein, substantially as described. 8th. The combination, in a harrow, of a seat having an interior chamber provided with an oblong slot, a bolt passing through the same and having its head adjustably confined within said chamber, a tooth bearing upon said seat and secured thereto by said bolt, a bolt extending from the under side of said seat through cross-bars to which the seat is fastened, all arranged and adapted to operate as described. 9th. In a harrow, a tooth seat provided with bolts having their heads secured in the seat, and their shanks projecting in substantially opposite directions through the frame and tooth respectively, as set forth. 10th. In a harrow, an adjustable tooth providing with a graduating device, substantially as described.

No. 28,892. Drawer for Counters, etc. (*Tiroir pour comptoirs, etc.*)

Epiphane Duchéno, Napierville, Que., 13th April, 1888; 5 years.

Claim—1st. The combination, with a counter or case A A', of

the beads or rails *a*, stop *a1*, drawer *B*, rockers *C*, notch *c*, substantially as shown and described. 2nd. The combination, with a counter or case *A* *A2*, of the beads or rails *a*, stop *a1*, drawer *B*, rockers *C*, notch *c*, ledges or cleats *e*, perforated shell *E*, lining *F*, outlet *f*, substantially as shown and described. 3rd. The combination, with a counter or case *A* *A2*, of a drawer or drawers *B* rocking on a fulcrum as on a pivot, substantially as shown and described.

No. 28,893. Plough. (Charrue.)

Walter J. M. Pratt, Portage la Prairie, Man., 13th April, 1888; 5 years.

Claim.—1st. In a plough, the skifes *p*, *p* of a plain flat bar of iron or steel bent round so that the upper ends may be adjustably bolted to the plough beam, and the cast plough body bolted to the lower curved part, substantially as and for the purpose hereinbefore set forth. 2nd. In a plough, the cast iron body having a recess to receive the skifo, substantially as described. 3rd. In a single plough, the skife having one end *t* tending upwards to form one of the plough handles, substantially as described. 4th. In a plough, the combination of frame *a*, front cross bar *b*, furrow wheel *c*, crank axle *d* located in bearings *e*, *e*, hand wheel *f*, lifting wheel *g*, substantially as described. 5th. In a plough, the skifes *pp*, in combination with the plough body *r* having attached to it in the usual way mould board *t* and shares *u*, of the frame bar or beam, substantially as and for the purpose hereinbefore set forth. 6th. In a plough, the combination of skifo *p*, frame *a*, hand lever *h*, quadrant *m* having notch *l*, and adjustable stop *n*, substantially as described and shown.

No. 28,894. Leather Crimping Machine.

(*Machine à cambrer les cuirs*)

Robert Marshall, Hamilton, Ont., 13th April, 1888; 5 years.

Claim.—1st. In a leather crimping machine, the combination of the double rigid moulds secured to the metal frame of the machine *a*, and provided with, on their inner surface, corrugated plates with rubber backing placed perpendicularly, and the rubber rollers driven by the mechanism of the machine, substantially as and for the purpose hereinbefore set forth. 2nd. In a leather crimping machine, the combination of the sliding moulds *c1*, grooved bearing *c2*, guide bar *c3*, springs *c*, rigid mould *F* with its corrugations and rubber backing and the rubber rollers *R*, substantially as described and for the purposes hereinbefore set forth. 3rd. In a leather crimping machine, the combination of the frame *a* with its supports and bearings, the trix *e* bolted to its rod *e1*, the longitudinal slotted bar *E4*, bevel cam wheel *e2* and the press plates *J* with their rods *J1*, driven as described and drawn substantially as and for the purpose hereinbefore set forth. 4th. In a leather crimping machine, the combination, with the frame of the machine, of the matrix with its rod *I1*, crank *k* and the longitudinal cross bars *L* attached together, the trix *e* with its rod *e1*, the sliding moulds and rigid moulds secured to the frame *a*, substantially as and for the purpose hereinbefore set forth. 5th. In a leather crimping machine, the combination of the trix, matrix, press plates, sliding moulds, rigid moulds with corrugations, the rubber rollers and the under side pressure surface plates *a*, provided with arms *m* connected to tulerum *s* on the stationary slide guides *I2* and *I2* driven by the mechanism of the machine, substantially as and for the purpose hereinbefore set forth. 6th. In a leather crimping machine, the combination of the double press plate *J* having rod *J1*, connected by means of a stud *J2* to the cam *J3*, of the bevel wheel *E1* reciprocated by the same, the springs *c*, sliding moulds *c1*, trix and matrix, rigid moulds with corrugations, rubber rollers and under side pressure plates, all operated by the mechanism of the machine, substantially as and for the purpose hereinbefore set forth. 7th. In a leather crimping machine, the combination, with the frame *a*, rigid moulds *F* bolted to the same, the angle front legs *a1* with their bearings, the hind legs *a2*, brace in front legs *a2*, bearings *a3* and *a2*, bracket *a5*, bed plate *a4*, guide *I2* and guide *I4*, and the brackets *V2* with their upper bearings for shafts *V1*, substantially as and for the purpose hereinbefore set forth.

No. 28,895. Moulding Machine.

(*Machine de moulage.*)

George Guntz, Wilkesbarro, Penn., U. S., 13th April, 1888; 5 years.

Claim.—1st. In a moulding machine, the combination of a revoluble table having a hole or chamber provided with guide flanges at the bottom, a moulding box or chill resting on the table around the hole, a pattern resting on the flanges inside the hole, and provided with a central stem for raising it, a ram guided and supported by the said flanges and fitting the interior of the pattern, and mechanism for raising the said central stem and ram. 2nd. In a moulding machine, the combination of a revoluble table having a series of equidistant holes or chambers provided with guide flanges, moulding boxes resting on the table around the holes, patterns resting on the flanges inside each hole, and provided with central stems for raising them, rams guided and supported by the said flanges and fitting the interior of each pattern, an anvil rigidly supported above the table, and mechanism under the table for raising each central stem and the ram when brought under the anvil of the revolution of the table. 3rd. In a moulding machine, the combination of a table having a hole or chamber, a moulding box resting on the table around the hole, an anvil rigidly supported over the moulding box, the pattern provided with a central stem for raising it guided in the hole in the table, a ram fitting the interior of the pattern, a revolving cam under the central stem for raising pattern, and a revolving cam or cams under the ram for raising and holding it raised up until the pattern has descended to its original position. 4th. In a moulding machine, the combination of a revoluble table having a hole or chamber provided with guide flanges *a1*, the moulding box or chill *e*, the lifter secured to the said box, a fixed anvil above the moulding box, the pattern *n* supported by the said lifter, and provided with a central stem, the ram *m* fitting into interior of the pattern and provided with rollers *k*, the revolving cam *s* for raising the pattern, and the revol-

ving cam *y* bearing on the said rollers for raising the ram when under the anvil, and holding it raised up until the pattern has descended to its original position. 5th. In a moulding machine, the combination of a reservoir for sand, two frames, each provided with a series of pivoted slats or valves, and supported one above the other within the reservoir, the levers *W* projecting from each valve, a horizontal lever and the bell crank lever pivotally connected to the levers *W* of each series of valves, and levers for opening the valves in the upper and lower frames alternately so that a measured charge of sand is delivered from the upper to the lower part of the reservoir. 6th. In a moulding machine, the combination of a reservoir for sand, a fixed frame provided with a series of pivoted slats or valves supported within the reservoir, a vertically adjustable frame also provided with a series of pivoted slats or valves supported under the fixed frame, the levers *W* projecting from each valve, a horizontal lever and a bell crank lever pivotally connected to the lever *W* of each series of valves, and levers for opening the valves in the fixed and adjustable frames alternately so that an adjustable measured charge of sand is delivered from the upper to the lower part of the reservoir. 7th. In a moulding machine, the combination of a reservoir for sand, a vertically adjustable frame provided with valves, and having arms projecting through slats in the reservoir, cover plates for the slats secured to the arms, twin screws engaging with the arms, and mechanism for revolving the screws simultaneously and adjusting the position of the said frame within the reservoir. 8th. In a moulding machine, the combination of a reservoir for sand, two frames, each provided with valves supported one above the other within the reservoir, levers pivotally connected to the valves for delivering a measured charge of sand from the upper to the lower part of the reservoir, and from the lower part of the reservoir to the moulding box, two revolving cams for operating the levers alternately in one direction and weights secured to the levers for restoring them to their original position. 9th. In a moulding machine, the combination of a reservoir for sand, a frame supported in the reservoir, the valves *U*, each provided with pivots *U1* and lever *W*, a horizontal lever pivotally connected to each of the levers *W*, a bell crank lever pivoted to the frame and to the horizontal lever, and a link or lever pivoted to the bell crank for opening and closing the valves. 10th. In a moulding machine, the combination of a revoluble table provided with a circular toothed rack, a spur wheel, a shaft for driving the rack, a worm wheel running loose upon a shaft connected to and actuating the said spur wheel, a revolving worm for turning the worm wheel continuously, a clutch secured to the shaft next to the worm wheel, a mechanism driven by the said worm for causing the clutch to engage and disengage with the worm wheel, and revolve and stop the table periodically at fixed intervals. 11th. In a moulding machine, the combination of a revoluble table provided with circular toothed rack, a spur wheel mounted on a shaft for driving the rack, a worm wheel running loose upon a second shaft, eccentric gear wheels for communicating a variable velocity from one shaft to the other, a revolving worm for turning the worm wheel continuously, a clutch secured to the second shaft next to the worm wheel, and mechanism driven by said worm for causing the clutch to engage and disengage with the worm wheel periodically at fixed intervals. 12th. In a moulding machine, the combination of a revoluble table having a hole or chamber in it, a moulding top box resting on the table around the hole, a pouring gate pattern provided with a central stem, a ram guided within the hole in the table and provided with a central hole for the said stem, an anvil rigidly supported over the moulding box, a revolving cam for raising the central stem, and a revolving cam or cams for raising the ram and holding it in its raised position until the gate pattern has been withdrawn from the moulding box. 13th. In a moulding machine, the combination of a revoluble table having equidistant holes or chambers in it, a ram and a pattern guided in each hole in the table, moulding boxes resting on the table around the holes, a sand reservoir provided with a delivery valve over one of the moulding boxes, an anvil rigidly supported over the next adjacent moulding box, a revolving shaft under the table provided with cams for simultaneously opening the delivery valve of the reservoir and raising the pattern, and a ram under the anvil, and intermediate lever mechanism connecting the sand delivery valve with the cams on the said shaft. 14th. In a moulding machine, the combination of a revoluble table having equidistant holes or chambers, and a circular toothed rack, a ram and a pattern guided in each hole in the table, moulding boxes resting on the table around the holes, a sand reservoir provided with a delivery valve over one of the moulding boxes, an anvil rigidly supported over the next adjacent moulding box, a revolving shaft under the table provided with cams for opening the delivery valve of the reservoir and raising the ram and pattern simultaneously, intermediate lever mechanism connecting the sand delivery valve with the cams on the said shaft, a shaft journaled in the frame of the machine and provided with a spur wheel gearing into the circular rack on the table, a continuously revolving wheel running loose upon each of the said shafts, and clutch mechanism secured upon each of the said shafts, and automatically engaging the said revolving wheel with their shafts intermittently and alternately as and for the purpose set forth. 15th. In a moulding machine, the combination of a revoluble table having a hole or chamber, a moulding box resting on the table around the hole, an anvil rigidly supported over the moulding box, a ram and a pattern guided in the hole in the table, an automatic spring latch engaging with the table and holding it stationary, a revolving shaft under the table provided with cams for raising the ram and pattern, and a tappet secured to the said shaft for releasing the latch and allowing the table to revolve when the cams have completed their actions.

No. 28,896. Roofing. (Toiture.)

Clinton French, Cleveland, Ohio, U.S., 15th April, 1888; 5 years.

Claim.—A roof consisting essentially of roof boards covered with roofing paper, or so-called roofing felt, the sheets thereof overlapping so as to form several thicknesses, a coating of coal-tar, or other suitable waterproof binder applied in a liquid condition to the roofing paper, and roofing ties arranged side by side without overlapping and embedded in such binder while the latter is in plastic condition, the joints between the ties being filled with such binding material, substantially as set forth.

No. 28,897. Vehicle Hub and Axle.*(Moyeu et essieu de voiture)*

Ernest G. Moulton, Holland, Vt., U.S., 14th April, 1838, 5 years.

Claim.—1st. The combination of the spokes J, cylindrical ring K, the collars B and C with the rivets F, interchangeable box A and nut-band D, substantially as and for the purpose herein set forth. 2nd. The combination of the collar or flange B, the inwardly projecting cylinder or shed N, and the said band G attached to the axle E, substantially as and for the purpose herein set forth. 3rd. The combination of the groove I, and the opening M, substantially as and for the purpose herein set forth.

No. 28,898. Saw Sharpening Machine.*(Machine à limer les Scies)*

Milo Corol, Chicago, Ill., U.S., 14th April, 1838, 5 years.

Claim.—1st. In a saw sharpening machine, a sweep supporting a grinding wheel in the front end, and provided with pivotal bearings at the back end, and having an endwise adjustment as described, in combination with the spring F, and means for supporting the loose end of said spring, substantially as and for the purpose set forth. 2nd. In a saw sharpening machine, a sweep consisting of the members b, b¹, provided with pivotal bearings at the back ends, and having one of the sides or members comprising said sweep set at a lower point than the companion member, substantially as and for the purpose set forth. 3rd. In a saw sharpening machine, the combination, with a sweep consisting of the members b, b¹, of the standards a, a, provided with the elongated slot a⁵, the pivotal bolts a³, a⁴ and the adjusting screw or screws a⁶, whereby said sweep is adapted to have an endwise adjustment, substantially as and for the purpose set forth. 4th. In a saw sharpening machine, the combination, with a sweep, as described, having the pivotal bearing of one side lower than that of the companion side, of an emery or grinding wheel journaled in the front end of said sweep, substantially as set forth. 5th. In a saw sharpening machine, the combination, with a sweep provided with pivotal bearings at one end, and supporting a journaled grinding wheel in the opposite end, of the yoke B¹, the rod B², the curved bar B³, provided with an elongated slot and a notched surface as described, the roller b⁵, the cam C and the shaft B⁴, whereby the required movement is imparted to the sweep and grinding wheel, substantially as set forth. 6th. In a saw sharpening machine, a compound cam consisting of the part C¹, mounted on the shaft B⁴, and the second part C² removably attached to the part C and having the outlines or form of a saw tooth or teeth indicated on the outside thereof, substantially as and for the purpose set forth. 7th. In a saw sharpening machine, the combination, with the grooved cam D, mounted upon the outer end of the rotating shaft B⁴, of the lever D¹ having a roller engagement with said cam, the swinging bar D², the rod D³, feed arm D⁴ and the feed finger d⁵, substantially as and for the purpose set forth. 8th. In a saw sharpening machine, the combination, with the curved swinging bar D², provided with the elongated slot d³, and the notched rack surface d⁴, of the connecting rod D³, the feed arm D⁴ and the feed finger d⁵, whereby the throw of said finger may be lengthened or shortened as required, substantially as set forth. 9th. In a device for holding straight saws during the process of sharpening, the combination, with the screws E, E¹, of the bar G, the means described for adjustably securing said bar in relation to said screws, the guide-track G¹, adjustably secured to the upper inner edge of the bar G, and the vertical adjusting screws a, a, whereby the ends of said track may be raised to present a concave or hollow surface along the upper edge, substantially as and for the purpose set forth. 10th. In a device for holding straight saws during the process of sharpening, the combination, with the bar G, means for adjustably supporting the same in relation to the saw sharpening machine, the guide track G¹, the adjusting screws a, a, the cap G², the slide bar K, the clamping bar K¹, the springs P, P² and the adjustable brackets S, S, substantially as and for the purpose set forth. 11th. The combination, with a slide for holding straight saws during the process of sharpening, of the cord U, the sheave U¹ and the weight U², substantially as described.

No. 28,899. Water Leakage Detector.*(Indicateur des fuites d'eau.)*

Thomas Houlgrave, Toronto, Ont., 14th April, 1838, 5 years.

Claim.—1st. The combination of two diaphragms A, A, each consisting of two sub diaphragms a and a¹ connected by a wire E, substantially as and for the purpose set forth. 2nd. The combination of the diaphragms A, A, the connecting wire E, the tightening rod D and the centre-pin C, substantially as and for the purpose set forth. 3rd. The combination of the diaphragms A, A, the connecting wire E and the telescopic pipes F, substantially as and for the purpose set forth. 4th. The combination of the leakage detector, the slot h of the cap H, the sound uniting chamber i, the casting I, the key rod K and the cock J of the water main, substantially as and for the purpose set forth. 5th. The combination of the cap H, the casting I, the key rod K and the cock J, substantially as and for the purpose set forth. 6th. The combination of the cock J, a box L filled with saw dust, and the iron rod K, substantially as and for the purpose set forth.

No. 28,900. Blind Stop or Fastening.*(Arrête-persienne)*

James Chase, Rochester, N. Y., U.S., 14th April, 1838, 5 years.

Claim.—1st. A blind fastening consisting of a hinge plate adapted to be secured to the inside of a blind, a spring fastening hook comprising two spring arms having at one end lugs to engage the said hinge plate, and at the other end portion provided with an extension to pass under a window sash, and means for holding the said extension when the sash is lowered, substantially as described. 2nd. In a blind fastening, the combination of a hinge plate adapted to be secured to the inner side of a blind, a pin to be fixed to a window sill beneath the lower sash, and a spring fastening hook

having lugs to engage the hinge plate, and a projection to pass under said window sash and engage said pin, substantially as described. 3rd. A blind fastening comprising a hinge plate D, having a transverse socket u, intersected by a central opening d, provided with side projections e, e, the fastening E composed of arms f, f, lugs c, c and loop v, substantially as described.

No. 28,901. Endless Plateway for wheeled Vehicles, Instruments and Machines. *(Ornière sans fin pour voitures & roues, instruments et machines.)*

Henry G. Tipping, Kingstown, Ireland, 14th April, 1838, 5 years.

Claim.—1st. A plateway for wheeled vehicles, consisting of a series of plates having guides fitting over the edges of the periphery of the wheel, said guides of each plate being arranged to lap over the edges of the periphery of the wheel in whatever position such plates may be in relation to the wheel, the said plates being hinged together at their ends, substantially as set forth. 2nd. The combination, with the wheel of a vehicle, of a series of plates a, having guides d fitting over the edges of the periphery of the wheel, as described, and hinged or connected together by links b and pins b¹, said links and pins being constructed so as to give play to said connection, substantially as described. 3rd. In self-laying plateways consisting of a series of plates hinged or connected together, as described, the combination of the links b and pins b¹, said links being provided with play, substantially as set forth. 4th. In self-laying plateways consisting of a series of plates hinged or connected together, as described, the combination of the handles or apertures f, substantially as and for the purposes set forth.

No. 28,902. Bow Drill. *(Foret à archet.)*

August Franke, Detroit, Mich., U.S., 14th April, 1838, 5 years.

Claim.—1st. In a drill, the combination, with the handle or frame of the drill stock journalled therein, the ratchet wheel secured upon the drill stock, and the rack bar working through a transverse slot in the frame and adapted to engage with the ratchet, substantially as described. 2nd. In a drill, the combination, with the handle and drill stock journalled therein, the case secured to the handle, the ratchet secured upon the drill stock, the transverse aperture through the case and the ratchet bar, the parts being constructed and arranged to operate substantially as described.

No. 28,903. Horse Detacher for Vehicles.*(Détegage Instantané.)*

Alonzo T. Teakles, Walton, N.S., 14th April, 1838, 5 years.

Claim.—1st. In a device for detaching horses from vehicles, the socket piece C secured to the trace section A, and provided with the mortise v and spring R, the catch-plates K hinged to opposite sides of said socket piece and provided with the hooks w and tenons z, the socket piece B, secured to the trace section E and provided with the slot b and mortise h, the slide D fitted to work in the slot b, and provided with the recesses d and flanges y, the spring L disposed in the slot b behind the slide D, and the cord G secured to the flange y, all being combined and arranged to operate substantially as set forth. 2nd. In a device for detaching horses from vehicles, the socket piece C secured to the trace section A, and provided with the mortise v and spring R, the catch plates K hinged to opposite sides of said socket piece, and provided with the hooks w and tenons z, the socket piece B secured to the trace section E, and provided with the slot b and mortise h, the slide D fitted to work in the slot b, and provided with the recesses d and flanges y, the spring L disposed in the slot b behind the slide D, the cord G secured to the flanges y, the shaft N provided with the hold back iron J and the lug M, all being combined and arranged to operate substantially as described.

No. 28,904. Section of Pipe Covering.*(Section de couverture de tuyau.)*

Herbert M. Small, Baldwinville, Mass., U.S., 14th April, 1838, 5 years

Claim.—1st. As a new article of manufacture, a tubular slitted section of pipe covering composed of one or more sheets of asbestos, one or more sheets of sponge felt, and one or more sheets of hair felt, wound in succession upon a mandrel or former which is thereafter removed, substantially as described. 2nd. As a new article of manufacture, a tubular slitted section of pipe covering composed of one or more sheets of asbestos, one or more sheets of sponge felt, and one or more sheets of hair felt, wound in succession upon a mandrel or former which is thereafter removed, and an external wrapper of textile material, substantially as described. 3rd. As a new article of manufacture, a tubular slitted section of pipe covering composed of one or more sheets of asbestos, and one or more sheets of sponge felt, wound in succession upon a mandrel or former which is thereafter removed, and the section slitted longitudinally, substantially as described. 4th. As a new article of manufacture, a tubular slitted section of pipe covering composed of one or more sheets of sponge felt, wound in succession upon a mandrel or former which is thereafter removed, substantially as described.

No. 28,905. Station Indicator Connected to Railway Cars. *(Indicateur des stations de chemins de fer.)*

Thomas W. Munroe, San Francisco, Cal., U.S., 14th April, 1838, 5 years

Claim.—1st. In a station indicator, the combination of the continuously revolving clutch hub a¹ and the continuously reciprocating bar j, both operated from the axle of the car, the bar U connected with the card changing mechanism, a clutch operated through intermediate mechanism by a stationary projection on the road bed and engaging with the hub a¹, whereby the bar j is caused to actuate the

bar O at intervals, and a fixed bracket for subsequently disengaging the said clutch, substantially as set forth. 2nd. In a station indicator, the combination of the continuously reciprocating bar J, the bar O connected with the card changing mechanism, and the arms P operated through intermediate mechanism by stationary projection on the road bed, and causing the bar J to actuate the bar O at intervals, substantially as set forth. 3rd. The combination of the revolving card cylinder provided with the pivoted cards L, with the box I provided with the stop K, so that the cards are displayed by the revolution of the card cylinder, substantially as set forth. 4th. In a station indicator, the combination of the continuously reciprocating arms J, the bar O connected with the card changing mechanism, the arms V causing the bar J to actuate the bar O at intervals, the catch lever Q provided with the disengaging pin Q, and the pin R engaging with the catch lever, and preventing the return of arms P, until the continued motion of bar O operates the disengaging pin Q, substantially as set forth. 5th. In a station indicator, the combination of the continuously revolving clutch hub A, the sliding clutch S, engaging therewith and causing the card changing mechanism to operate the segment V, operated through intermediate mechanism by a stationary projection on the road bed, for throwing the clutch into gear with the hub A at intervals, and the fixed bracket T, provided with inclines T, for subsequently throwing the clutch S out of gear, substantially as set forth.

No. 28,906. Telegraphic Instrument.

(Instrument télégraphique.)

Charles G. Burke, Richmond Hill, N.Y., U.S., 14th April, 1888; 5 years.

Claim.—1st. In a telegraphic instrument, the combination of a solenoid capable of motion longitudinally, and a magnet having one of its poles surrounding one end of the solenoid, and the other pole entering the other end of the solenoid. 2nd. In a telegraphic instrument, a solenoid supported between two magnetic poles of opposite character, one of said poles surrounding one end only of the solenoid, and the other pole extending within the solenoid, whereby the lines of force are directed obliquely through the coils of the solenoid. 3rd. In a telegraphic instrument, a solenoid suspended between the poles of a magnet, one of said poles extending within the solenoid, and the other pole made tubular and surrounding the other end of the solenoid, neither pole extending beyond its centre, and a recording device operated by the movements of the solenoid. 4th. In a telegraphic instrument, two solenoids upon a common support, each solenoid having presented to its opposite ends magnetic poles of opposite character, one of which poles extends within the solenoid, and the other pole surrounds the same, and a recording device operated by the movements of the solenoids. 5th. The telegraphic instrument described, consisting the electromagnets, the solenoids and the recording devices, the poles of the magnets being arranged to direct only oblique lines of force through the solenoid coil.

No. 28,907. Garment Stay. (Buse de corsage.)

Roscoe B. Wheeler, Detroit, Mich., U.S., 14th April, 1888; 5 years.

Claim.—1st. A garment stay consisting of a flexible blade having a textile covering on one side, and a gutta-percha tissue coating or covering on the opposite side, the said gutta-percha tissue being adherent to the blade and to the textile covering upon each edge thereof, whereby the blade is retained in place and the stay is adapted to be attached to the open seam of a garment by the application of heat, substantially as specified. 2nd. A garment stay comprising a flexible blade having a cloth or webbed covering on one side or face, and an unperforated adhesive or gutta-percha tissue covering or coating on the opposite face, the said parts cemented together, whereby the flexible blade is retained in position and the stay is adapted to be attached to a garment by the application of heat, substantially as specified.

No. 28,908. Friction Gearing.

(Embrayage à friction.)

James McMaugh and Arthur W. McMaugh, St. Catharines, Ont., 14th April, 1888; 5 years.

Claim.—1st. The construction and combination of the outer rim or cylinder A and the inner rim or hub B, with lugs C, the hub or inner rim and outer rim or cylinder being independent of each other. 2nd. The filling of rubber or other elastic material D, between the inner rim or hub and the outer rim or cylinder. 3rd. The plates for holding the rubber or other elastic filling in place, substantially as and for the purpose hereinbefore set forth.

No. 28,909. Bustle. (Tournure.)

Samuel S. Williamson, Bridgeport, Conn., U.S., 14th April, 1888; 5 years.

Claim.—1st. In a bustle, the combination, with a suitable waist band and check tape, of a series of distending bows and a series of spring loops interposed one between the ends of each two bows and a lacing cord, whereby the looped ends of the bows are secured in assembled position, and the width of bustle controlled and varied, substantially as specified. 2nd. A bustle consisting of a plurality of distending bows, between the ends of each of which and the ends of the next bows is interposed a spring loop and a suitable waistband, check, tape and lacing cord. 3rd. A bustle consisting of the waistband 1, the spring tape 2, the bows 3, 4, 5, 6, 7, the loops 8, each serving to connect the ends of two bows, the lacing cord, the hooks 9 clasped through the loops, and the lacing cord 10 extended between the corners of the bustle.

No. 28,910. Grain Weigher. (Balance à grain.)

Lester Reynolds, Yreka, Cal., U.S., 14th April, 1888; 5 years.

Claim.—1st. The combination, with an oscillating grain holding bin having an outstanding arm, of a scale mechanism for engaging the

arm of the bin, composed of a horizontal scale-beam F, having arms F, F, the hook-headed bar G pivoted to beam F, and the lever-bar H, pivoted to bar G, and actuated by the arms F upon the lifting of beam F, to cause the disengagement of bar G and the arm of the bin, as described. 2nd. The combination, with a suitable supporting casing, of an oscillating bin B having hoppers b, b, mounted on a transverse shaft D, arms d, d, on opposite sides of said bin, playing through openings in the sides of the casing, and scale mechanisms on each side of the bin adapted to automatically engage and release the bin as it oscillates, each composed of the scale-beams F, having arms F, spring controlled hook-bar G and pivoted lever-bar H, all constructed and operating as described. 3rd. The combination of the oscillating bin B, having vertical partition G and inclined bottoms b, mounted on a transverse shaft, and a hopper a adapted to deliver grain to the bin, with the scale mechanisms composed of beams F, rods G and levers H, and their connections, and the registering mechanisms composed of wheels I, J and K, and their connections, operated by the oscillations of the bin, all constructed, arranged and operating substantially for the purpose set forth. 4th. The combination of casing A, having hopper a, and chute C, the oscillating bin B having hoppers b, b, the pieces B, secured to the casing and closing the mouths of the hoppers b, b, and the arms d, d, with the scale mechanisms enclosed in frames E, E, on the sides of the casing, and each composed of beams F having arms F, rods G having head G, for engaging the arms d, and lever H, pivoted to rod G and controlled by arms F, the springs s, and pieces G and H, and the registering mechanism composed of wheels I, J and K, and their index arms and dials, and the actuating pawl L on the bin, and brake M, all constructed, arranged and operating substantially as described.

No. 28,911. Car-Coupling. (Attelage de chars.)

John D. Keith, Keith, and Honestus H. Boone, Navasota, Texas, U.S., 14th April, 1888; 5 years.

Claim.—In a car-coupling, the combination of the draw-head having the open space D at its front end, the longitudinal groove B in its side extending rearward from said space, and the transverse recess C at the rear end of said groove, the coupling bar resting in the groove B and having a lug G at its rear end pivoted in the recess C, and the hook F at its front end arranged within the open space D, and the spring H having its rear end secured to the side of the draw-head in rear of the recess C, and its front end bearing against the side of the coupling bar in advance of the lug G, substantially as specified.

No. 28,912. Universal Shaft Coupling.

(Accouplement universel des arbres de couche.)

William A. Haskell, jr., Kingston, Ont., (assignee of Andrew Robos, Somerville, Mass., U.S.), 14th April, 1888; 5 years.

Claim.—1st. The herein described universal shaft coupling consisting of an intermediate shaft supported in suitable bearings between two main shafts, and a pair of coupling-links or connecting-pieces provided with jaws at their opposite ends, and arranged one between the end of each main shaft, and the opposite end of the intermediate shaft, and connected with the ends of said shafts by means of a pair of oscillating bars, each pivoted at its centre within the slotted end of one of the said shafts, in line with the axis thereof, and having its opposite ends pivoted or journaled within the adjacent jaws of the coupling-link, substantially as and for the purpose set forth. 2nd. In a universal shaft coupling, the combination, with a pair of shafts A, B, each having a slot at its end, of an intermediate connecting-shaft D, supported in suitable bearings between the ends of the shafts A, B, and having a slot at each end, and a pair of coupling-links or connecting-pieces G, bifurcated at each end to form jaws G, G, and arranged one between each of the main shafts, and the adjacent end of the intermediate shaft, and connected with said shafts by a pair of oscillating bars i, i, each pivoted at its centre on a pin k, within the slotted end of one of the said shafts, in line with the axis thereof, and having its opposite ends pivoted or journaled within the adjacent jaws of the coupling-link, all operating substantially in the manner and for the purpose described. 3rd. In a universal shaft-coupling, the combination, with a pair of shafts adapted to run at different angles, or levers, or both, and each having a slot at its extremity, of a connecting-piece or link G having its opposite ends bifurcated to form jaws, and a pair of oscillating bars i, i, each placed within the slotted end of one of the shafts and pivoted therein at the centre of its length directly in line with the axis of the shaft by means of a pin or bolt k, and having its opposite ends pivoted or journaled within the adjacent jaws of the coupling-piece or link G, all operating substantially as and for the purpose set forth.

No. 28,913. Stove. (Poêle.)

The Michigan Stove Company, (assignee of William J. Keep), Detroit, Mich., U.S., 14th April, 1888; 5 years.

Claim.—1st. The combination, in a stove, of an opening over the fire-pot, through which the heat and light can radiate upward into the room, a reflector arranged over such opening to deflect the heat rays, and having its upper edge overhanging and projecting forward over the major part of the opening, and a screen of mica or equivalent material to prevent the discoloration or injury of the reflector by smoke and gas, substantially as described. 2nd. The combination, with a stove, of a series of reflectors arranged to deflect the rays of heat or light in radial directions from the stove, substantially as described. 3rd. The combination, in a stove, of a vertical section, as A, B, inclosing the fire-pot, an returned section C arranged over the fire-pot, a reflector E arranged above said returned section, and mica interposed between the fire and reflector, substantially as described. 4th. The combination, in a stove, of a vertical section, an returned section C having mica filled openings, an overhanging section D, and reflector set in front of said overhanging section, and with a space between the two, substantially as described. 5th. The combination, in a stove, of a vertical section, an returned section C having openings filled with mica, an overhanging section D and a reflector set in front of said section D, having an air flue between section D and the

reflector, to keep the reflector from discoloration, substantially as described. 6th. The combination, in a stove, of a vertical section, an intumed section C having openings filled with mica, and multiple reflectors, as E, E', arranged to diffuse and spread the rays of light and heat in various directions, substantially as described. 7th. The combination, in a stove, of a fire-pot, a substantially vertical section surrounding the said fire-pot, an intumed section extending over the fire-pot to near the centre thereof, and provided with mica openings, and an overhanging section running from the intumed section to the front of the stove, and the whole adapted to serve with a reflector arranged over the fire-pot, substantially as described. 8th. The combination, in a stove, of a substantially vertical section surrounding the fire-pot, an intumed section having mica filled openings extending over the fire-pot to near the centre thereof, and an overhanging section running from the intumed section to the front of the stove, and the whole adapted to serve with a reflector arranged over the fire-pot, substantially as described.

No. 28,914. Dumping Wagon.

(Wagon-tombereau.)

Alexander Rodgers and William T. Hatten, Rosoland, Neb., U. S., 16th April, 1888; 5 years.

Claim—1st. In a dumping wagon, the combination, with the body A, of the bottom B comprising the leaves C, C, pivoted near the outer ends to the said body, and the angle lever I pivoted to the side of the body, and the operating rods M, M, connecting one arm of the said lever to the free ends of the leaves, substantially as and for the purpose specified. 2nd. In a dumping wagon, the combination, with the body A, of the bottom B comprising the leaves C, C, pivoted at the outer ends to the wagon, and having the laterally projecting eyes secured to the inner ends, the angle lever I pivoted to the upper edge of the body, and having the arm K provided with an inwardly extending pintle or stop k and the arm K', and the operating rods M, M, connecting the end of the arm K' to the eyes on the free ends of the leaves C, C, respectively, substantially as and for the purpose specified. 3rd. In a dumping wagon, the combination, with the body A, of the leaves C, C, having the trunnions c, c, on the sides thereof, near the outer ends journalled in bearings on the lower edge of the body, the angle lever I pivoted to the side of the body, operating rods M, M, connecting one of the arms of said lever to the free ends of the leaves C, C, respectively, and the lever F pivoted to the side of the body and connected to the other arm of the lever I, all constructed, arranged and operated substantially as specified. 4th. In a dumping wagon, the combination, with the body A, having the depending bearings D, D, secured to the lower edge thereof, of the movable bottom B comprising the sections C, C, provided near the outer ends with trunnions journalled in the bearings D, D, guide-bar G on the side of the wagon lever F, journalled on the projecting end of one of the said trunnions, and operating between the guide-bar G and the side of the body, angle lever I, having the arms K and K', operating rods M, M, connecting the arm K' to the free ends of the leaves C, C, respectively, and the connecting rod L, connecting the arm K to the lever F, all constructed and arranged substantially as and for the purpose specified. 5th. In a dumping wagon, the combination, with the body A, of the leaves C, C, journalled near the outer ends to the said body, the guide-bar G having a notch g therein, lever F pivoted to the side of the body and adapted to engage in the said notch g, the spring F', secured to the lever and adapted to bear on the opposite side of the bar G from the lever, for the purpose described, the transverse shaft H journalled in bearings at the upper edge of the body near the centre, the angle levers I, I, on the outer ends of the shaft and having the arms K and K', the operating rods M, M, connecting the arm K' to the free ends of the leaves C, C, respectively, and the rod L connecting the arm K to the lever F, all constructed and arranged substantially as and for the purpose specified. 6th. In a dumping wagon, the combination, with the body A, of the leaves C, C, journalled therein and adapted to be depressed at the inner ends, the angle lever I comprising the arms K and K', having, at their extremities respectively, the intumed pintle or stop k and the outwardly turned pintle K', the operating rods M, M, connecting the pintle K' to the free ends of the leaves C, C, respectively, and the lever F pivoted to the body and connected to the extremity of the arm K, the pintle or stop k on the end of the said arm K, being adapted to engage the upper edge of the body to limit the motion of the angle lever, all constructed, arranged and operated substantially as and for the purpose specified. 7th. In a dumping wagon, the front axle provided with the fifth wheel R, combined with the perch S, attached to the front axle only within the fifth-wheel, and the rods T connecting the other end of the perch to the side of the wagon body, substantially as specified.

No. 28,915. Guard for Ships' Berths, Beds, etc.

(Garde pour postes, lits, etc., de navires.)

R. L. Munkland, Lynn, and George Heath, Revoro (assignees of Thomas D. Smith, Lynn), Mass., U. S., 16th April, 1888; 5 years.

Claim—1st. The combination, with the side board, of an ordinary ship's berth or bedstead, of a guard frame pivotally connected thereto, consisting of the links a, a, and the rail A adapted to be lifted and folded, substantially as described. 2nd. The combination, with the side board of an ordinary ship's berth or bedstead, of a guard frame pivotally connected thereto, consisting of the links a, a, and rail A, said rail A being provided with a projecting lip c, substantially as described and for the purpose stated.

No. 28,916. Guide for Circular Saws.

(Guide pour scies circulaires.)

John S. Marshall, Inlay, Mich., U. S., 16th April, 1888; 5 years.

Claim—1st. The combination of the pivoted plate E, the guide arm adjustably mounted thereon and provided with the guide pin to bear against the inner side of the saw, the pivoted plate O, arranged above the plate E, the guide arm adjustably mounted thereon, and provided with the guide pin to bear against the outer side of the saw

means connecting the free end of the plate E, to the plate O, and the adjusting screw to operate the plates O and E, substantially as described. 2nd. The combination of the pivoted plate E, having the guide arm G, for the purpose set forth, the plate O arranged on the plate E pivoted at one end, and having the longitudinally and laterally adjustable guide arm V, for the purpose set forth, the yoke B attached to the plate O, the adjusting screw D engaging the said yoke and swivelled to the plate E, to move the latter independently of the plate O, and the adjusting screw F, to move the plates O and E simultaneously, substantially as described. 3rd. The combination of the plates E, O, pivoted together at one end, the guide arms G, V, adjustably mounted on the plates E, O, respectively, connections between the plate O and the free end of the plate E, the adjusting screw D, to operate the plate E independently of the plate O, and the adjusting screw F, to operate the said plates simultaneously, as set forth. 4th. The combination of the plate O, pivoted at one end, the guide arm mounted thereon and adjustable both longitudinally and laterally thereof, and the adjusting screw acting on the free end of the plate to operate the same, substantially as set forth. 5th. The combination of the guide arms having transverse internally threaded openings in their ends, and the sleeves mounted in said openings and having a recess I in one end to receive a plug, and an opening L in the other end communicating with a recess J, substantially as set forth. 6th. In a saw guide, the plates E, O, pivoted together at one end and each provided with the adjustable guide arms between their ends, and the screws for operating on the outer or free ends of the plates and moving the same, as set forth.

No. 28,917. Machine for the Manufacture of Cigarettes.

(Machine pour la fabrication des cigarettes.)

Antole E. Deconulé, Paris, Franco, 16th April, 1888, 5 years.

Claim—1st. The mechanism for manufacturing paper tubes, by shaping a continuous strip of paper rolled on a bobbin into a continuous tube, the longitudinal joint of which is formed without pasting by the internal interlocking and incorporation, one in the other, of the folded edges of the paper, the said mechanism consisting of the brake P acting on the paper bobbin, the stretcher P₁, the guide rollers P₂, P₃, P₄, P₅ and P₆, the stamp S, the spindle U and its adjusting devices, the shapers Q and U, the presser R, the folding device Z set into the spindle U, the milled roller T, the feed roller V and the scissors W, constructed, combined and operating as hereinbefore described and illustrated in the drawings hereto annexed. 2nd. The mechanism for transporting the paper tubes, combined with the mechanism for manufacturing the said tubes forming the subject of the first claim clause hereof, as hereinbefore described and illustrated in the drawings hereto annexed. 3rd. The mechanism for distributing and compressing the tobacco, consisting of the equalizing feed aprons N₁, N₂, the dividing comb A₁, the blade and presser M₂, M₁, and the compressor Z, Z₁, as hereinbefore described and illustrated in the drawings hereto annexed. 4th. The spindle C' for forcing the plug of tobacco into the paper tube held on the tunnel W, and for subsequently expelling the filled cigarette, arranged and operating as hereinbefore described and illustrated in the drawings hereto annexed. 5th. The slide for delivering the manufactured cigarettes to the receiving box L, such slide having alternating rectilinear horizontal movements imparted hereto, as hereinbefore described. 6th. The general arrangement and combination of mechanism for manufacturing paper cigarette tubes, the longitudinal joints of which are formed by the internal interlocking and incorporation, one in the other, of the folded edges of the paper, for cutting off and transporting the manufactured tubes and for the distribution, compression and insertion of the tobacco, as hereinbefore described and illustrated in the drawings hereto annexed. 7th. The mechanism for the manufacture of paper cigarette tubes without pasting, constructed as hereinbefore described and illustrated in the drawings hereto annexed. 8th. The construction and arrangement of the two cam shafts B and K, co-operating together to impart the required movements to the various parts of the mechanism, as hereinbefore described and illustrated in the drawings hereto annexed. 9th. The pin rods F₁, F₂, for transporting the tubes, constructed and operating as hereinbefore described and illustrated in the drawings hereto annexed.

No. 28,918. Automatic Feed-Water Apparatus for Steam Boilers.

(Alimentateur automatique de chaudière à vapeur.)

Milo Covel, Chicago, Ill., U. S., 16th April, 1888; 5 years.

Claim—1st. In a boiler feeding apparatus operated wholly within itself, the combination, with a feed chamber, the highest part whereof is on a level with the high water line in the boiler, of a water reservoir located above said feed chamber and separated therefrom by a horizontal diaphragm, a number of ports or openings forming communicating passages between said feed chamber and reservoir, a steam piston and a piston or water valve rigidly connected together in a vertical plane, and moving in a continuous cylinder common to both, and the feed water pipe connected to the lower end of said cylinder and leading to the boiler, all combined and arranged to operate substantially as and for the purpose set forth. 2nd. In a boiler feeding apparatus of the character hereinbefore described, the combination, with a water reservoir, of a feed chamber located below said reservoir and separated therefrom by a diaphragm, and a series of ports or openings forming a communication between said reservoir and feed chamber, whereby water may flow from the former into the latter in equal proportion to the amount evaporated by the boiler, substantially as set forth. 3rd. In a boiler feed apparatus, a supply reservoir, a feed chamber and a breast properly chambered to provide the steam and water cylinders, and the steam chests, all being constructed and arranged in connection with said reservoir and feed chamber, substantially as and for the purpose set forth. 4th. In a boiler feeding apparatus, the combination, with a supply reservoir and feed chamber, of a steam and water cylinder, the latter being a continuation of the former but of a less diameter, a steam piston moving in said steam cylinder, and a piston valve moving in said water cylinder, said piston being arranged below said steam

piston and rigidly connected to the same by means of a cylindrical body, whereby said steam piston and piston valve are adapted to have a simultaneous movement, substantially as set forth. 5th. In a boiler feeding apparatus, the combination, with a water cylinder, of a supply reservoir provided with parts leading into said cylinder, a feed chamber provided with a second series or set of ports through which the water passes into said feed chamber from said cylinder, a third series of ports opening from the lower part of said feed chamber into said cylinder, and passage leading to the boiler, and a piston valve adapted to open and close said ports or passages in the order described, whereby water may flow from the reservoir into the feed chamber when said piston valve is on the down stroke, and from the feed chamber to the boiler when the same is on the up stroke, substantially as set forth. 6th. In a boiler feeding apparatus, the combination, with a steam and water cylinder communicating with each other but of a different diameter, of a steam piston, a piston valve connected to, and having a simultaneous movement with, said steam piston, a steam chest having steam and exhaust ports, a valve moving in said chest, means for adjusting said valves to open and close said ports at the proper time, and a steam passage leading from said steam chest into the upper end of said steam cylinder, whereby steam pressure is supplied to force the piston or pistons in one direction, the water pressure from the boiler supplying the pressure for the return stroke, substantially as and for the purpose set forth. 7th. In a boiler feeding apparatus, the combination, with a feed chamber, of a steam chamber, a steam passage through which steam is conducted into said chamber from the source of supply, a second steam passage leading from said steam chamber into said feed chamber, a piston valve moving in said steam chamber for the purpose of opening and closing said steam passages communicating with said feed chamber, and means for setting or adjusting said piston valve to open and close said passage at the proper time with reference to the movement of the steam piston, substantially as and for the purpose set forth. 8th. In a boiler feeding apparatus, the combination, with the exhaust pipe or passage communicating with the atmosphere, of a hand valve located therein, whereby the movement of said apparatus may be governed, substantially as set forth. 9th. In a boiler feeder, the metallic packing consisting of the ring *d*, turned down at both ends to form the double shoulder *d*₁, the rings *d*₂, *d*₃, the follower cap *d*₄, and the bolt *d*₅, substantially as described. 10th. In a boiler feeder, steam piston valve *B* consisting of the part *E*, having an exhaust passage on the exterior surface, and cut out on the inner side, to provide the perforated flanges *e*, *e*₁, the companion part *E*₁ provided with the correspondingly perforated lugs *e*₂, *e*₁, adapted to be inserted between said flanges, and the valve rod passing through said parts, whereby the same are secured together, substantially as and for the purpose set forth. 11th. In a boiler feeder, the combination, with a piston valve consisting of two or more parts and having an interior recess, of a coiled or spiral spring inserted in said recess, whereby the parts composing said valve are held to a close bearing with the inclosing wall, substantially as set forth.

No. 28,919. Heating Tube. (Tube de calorifere.)

Henry Tilden, Minneapolis, Minn., U.S., 16th April, 1888; 5 years.

Claim.—1st. A heating tube for furnaces and similar uses, consisting of a series of sections provided with a series of radial plates, extending inside and outside of said sections and disposed on both sides longitudinally of the axis of said sections, the plates being shorter than the sections, and of similar form both inside and outside of the same, the plates of each section being placed to break joints with the plates of the adjacent section or sections, substantially as described. 2nd. A heating tube for furnaces consisting of sections, the sections intermediate the end sections being provided with radial plates, extending inside and outside of said sections and disposed longitudinally of the axis of the sections and of the same form on both sides, the plates of each section being placed so as to break joints with the adjacent section or sections, and connections uniting the end sections, substantially as described. 3rd. A heating tube for furnaces and similar uses, consisting of a series of sections provided with a series of radial plates extending inside and outside of said sections, the plates inside being of different lengths but all disposed longitudinally of the axis of the section, the plates of each section being placed so as to break joints with those of the adjacent section or sections, substantially as described.

No. 28,920. Hay Press. (Presse à foin.)

Frederick W. Flato, Flatonia, Texas, U.S., 16th April, 1888; 5 years.

Claim.—1st. The combination, with the wagon bed, of the body secured thereon and having the slots *D*, *D*₁ in the sides, the head blocks sliding within the said body and having the laterally extending arms to operate in the slots *D*, the pulleys connected to the ends of the said guide-arms, the windlass journaled at the end of the body, and the power ropes *O*, operating around the said pulleys and adapted to be wound on the windlass, whereby the head blocks are drawn together to compress the hay which is placed between them, substantially as and for the purpose specified. 2nd. The combination, with the wagon bed, of the body *B* secured thereon and having the slots *D*, *D*₁ in the sides, the transverse bars *G*, *G*₁ arranged near the top of the body and extending beyond the sides thereof, and folding lids *E*, *E*₁ hinged to the upper edge of the body and having the bevelled blocks *F*, *F*₁ to rest on the ends of the bars *G*, *G*₁, when the lids are thrown back, the head-blocks *H*, *H*₁ sliding within the body and having the laterally extending guide-arms to operate in the slots *D*, *D*₁, the pulleys journaled at the ends of the guide-arms, the windlass journaled at the rear end of the body, and the power ropes operating around the pulleys and adapted to be wound on the said windlass, substantially as and for the purpose hereinbefore specified. 3rd. The combination, with the wagon bed, of the body *B* secured thereon, having the openings *D*, *D*₁ in the sides, and comprising the lower part *B*₁ and the upper part *B*₂ provided with depending standards *b*₂, *b*₂₁ having perforations in the lower ends to align with perforations in the side of the lower part *B*₁, the stay-rods *C*, *C*₁ to pass through the said aligned perforations, hooks *R*, *R*₁ pivoted to the opposite sides of the body lids *E*, *E*₁ hinged to the upper edge of the body,

locking bar *P* to extend transversely over the said lids and be held in place by the hooks *R*, which engage the ends thereof, head-blocks *H*, *H*₁ sliding in the body and having grooves in the inner sides to align with grooves in the bottom of the body bars *I*, *I*₁ secured to the outer sides of the head-blocks and extending at the ends through the slots *D*, the rods *K*, *K*₁ secured to the bars *I*, *I*₁, pulleys *L*, *L*₁ journaled on the extremities of the rods *K*, *K*₁, windlass *M*, journaled in bearings on the end of the body and having the radial spokes or handles *N*, *N*₁ thereon, and the power-ropes *O*, *O*₁ attached at one end to one of the rods *K*, *K*₁ passing around the pulleys *L*, *L*₁ and secured at the other end to the windlass, whereby, when the latter is rotated, the ropes are wound thereon, and the head blocks are drawn toward each other, all constructed and arranged substantially as and for the purpose specified. 4th. In a baling press, the combination, with the pressing-box *B* having slots *D*, *D*₁ in the sides, of the followers or head-blocks *H*, *H*₁ moving longitudinally in the box, lateral guide-arms on the said followers to operate in the slots *D*, means, substantially as described, to draw the followers towards each other, hinged lids *E*, *E*₁ on the upper side of the box, locking bar *P*, to be placed across the said lids when they are closed, and the hooks *R*, *R*₁ pivoted to the sides of the box and adapted to be engaged with the ends of the bar to hold it in place, substantially as and for the purpose specified.

No. 28,921. Dress Pattern Ruler.

(Règle de patron de robe)

Azilda Caron, Detroit, Mich., U.S., 16th April, 1888; 5 years.

Claim.—1st. The curve ruler for use in laying off dress patterns, said ruler provided with the shape and dimensions of curves shown in the drawing, substantially as described. 2nd. The curve ruler for use in laying off dress patterns, consisting of a graduated straight edge on one side, and provided upon the other side with the particular shape and dimensions of curves illustrated in the drawings, substantially as described. 3rd. The curve ruler for use in laying off dress patterns, consisting of a graduated straight edge, about 23 inches in length, the other edge of the ruler provided with curves of the shapes and dimensions shown in the drawing, substantially as described. 4th. The curve ruler for use in laying off dress patterns, said ruler provided with a graduated straight edge, and at its other edge provided, in the order named, with curves corresponding in shape and dimensions with the following pattern lines, front of sleeve, top of sleeve, neck, back of shoulder, back seams, darts and arm scye, substantially as and for the purposes described. 5th. The curve ruler for use in laying off dress patterns, said ruler provided with a graduated straight edge, and at its other edge provided with curves of the shapes and dimensions illustrated in the drawing, said curve edge likewise graduated, substantially as described. 6th. The ruler for laying off waist patterns, said ruler provided with scales of one quarter inch to an inch corresponding with the measures of the front bust, back bust, front and back waist, back hip and hip arranged upon the ruler in position to be used from a common point *A*, as a starting point, substantially as described.

No. 28,922. Apparatus for Vaporizing and Burning Liquid Hydrocarbons. (Foyer à hydrocarbures.)

William G. Bussey, New York, N.Y., U.S., 16th April, 1888; 5 years.

Claim.—1st. In an apparatus for the burning of liquid hydrocarbons, the combination, with a vaporizing chamber provided with suitable means for the introduction therein of a liquid hydrocarbon under pressure, of a mixing tube adapted for the mingling of hydrocarbon vapour and air within the same before combustion, the interior of said tube being open and unobstructed from the point where the vapor enters the same to the mouth or combustion end thereof, said tube being provided with a suitable opening at its bottom or side for the admission of air, and having its combustion end located wholly or partly under the lower side of said vaporizing chamber and adjacent thereto, together with a vapour outlet tube leading from the upper interior part of said vaporizing chamber and terminating outwardly in an orifice opening into the interior of said mixing tube, at a point below the combustion or burning end thereof, constructed substantially as described and for the purpose specified. 2nd. In an apparatus for burning liquid hydrocarbons, the combination, with a vaporizing chamber provided with suitable means for the introduction therein of a liquid hydrocarbon under pressure, of a mixing tube constructed and adapted for the mingling of hydrocarbon vapour and air within the same before combustion, and provided with a suitable inlet for air at its bottom or side, the interior of said tube being open and unobstructed from the point where the vapour enters the same to the mouth or combustion end thereof, and the said mouth or combustion end being covered with wire gauze, or perforated metal, and located wholly or partly under the lower side of said vaporizing chamber, together with a vapour outlet tube leading from the upper interior part of said vaporizing chamber, and terminating outwardly in an orifice opening into the interior of said mixing tube, at a point below the combustion or burner end thereof, constructed substantially as described and for the purpose stated. 3rd. In an apparatus for burning liquid hydrocarbons, the combination of the vaporizing chamber *A*, provided with suitable means for the introduction therein of a liquid hydrocarbon under pressure, of a mixing chamber adapted for the mingling of gas or vapour and air before combustion, and the outlet tube *C* leading from the upper interior part of the vaporizing chamber to the chamber *E*, provided with the constricted orifice or vapour outlet *D*, opening into said mixing chamber *E*, the sum total of the area of which orifice or vapour outlet, whether one or more, is proportioned to the interior capacity of the vaporizing chamber, and the pressure upon the liquid entering the chamber, substantially as stated, whereby the pressure of the vapour in the vaporizing chamber is maintained substantially equal to the pressure at which the liquid is forced into the said vaporizing chamber, constructed substantially as and for the purpose specified. 4th. In an apparatus for burning liquid hydrocarbons, the combination, with the mixing chamber *E*, of the outlet tube *C*, the cap *I*, the aperture *D*, and the opening *d* in the side of the mixing chamber *E*, constructed

substantially as described and for the purpose stated. 5th. In an apparatus for the burning of liquid hydrocarbons, the combination, with the vaporizing chamber A, of a series of two or more mixing tubes E, E, arranged wholly or partly under opposite, or nearly opposite, sides of the chamber A, together with the vapour outlet tubes C, C, all located, arranged and constructed substantially as and for the purpose stated.

No. 28,923. Hot Water Radiator.

(*Distributeur d'eau chaude.*)

Eugène S. Manny, Montreal, Que., 16th April, 1888; 5 years.

Claim.—A hot water radiator, composed of a certain number of vertical hollow double independent sections A, mounted on a double hollow corresponding horizontal base B, by means of bolts C, and provided with a system of air tubes O, P and valve Q, the whole as above described and for the purposes set forth.

No. 28,924. Fence Rail Sawing Machine.

(*Machine à scier les pales des clôtures.*)

Howard Archibald, Greenfield, N.S., 16th April, 1888; 5 years.

Claim.—The combination, in a sawing machine of a ratchet and pawl mechanism, and shaft 1 carrying bevelled feed wheels 2, 2, compression roller 9 carried by sliding block 7 and truck 17, provided with a sliding bar 18 and lever 20, as set forth.

No. 28,925. Barbed Fence. (*Clôture barbelée.*)

Chester A. Holgo, Beloit, Wis., U.S., 16th April, 1888; 5 years.

Claim.—1st. The combination, in a wire fence, of two longitudinal wires, a loop having its ends bent over said wires on the same side thereof, and a wheel mounted upon said loop, substantially as and for the purpose set forth. 2nd. In a wire fence, the combination of the parallel wires A, A, and spurs C, with loops B, constructed substantially as described, the ends of which are bent over said wires and approach each other, as well as the opposite sides of the wheel C mounted upon said loops, substantially as shown and described.

No. 28,926. Whiffletree. (*Palonnier.*)

George N. Pearson, Hantsport, N.S., 16th April, 1888; 5 years.

Claim.—1st. A whiffletree consisting of the single tree A, evener bar B in rear thereof, and both independently pivoted at the middle in a clevis E, as set forth. 2d. The combination of the single tree A and outside traces B, C, attached to the ends respectively, the clevis E pivoted to the middle of said single tree, and the evener bar D pivoted to said clevis and intersecting inside traces B, C, attached to said evener, substantially as set forth for the purpose described.

No. 28,927. Locomotive and other Steam Engines. (*Machine locomotive et autres.*)

Thomas R. Crampton, Westminster, Eng., 16th April, 1888; 15 years.

Claim.—1st. In steam engines, in which two cylinders are used to drive two cranks set opposite to one another on the crank shaft, placing the two cylinders end to end and out of line with one another, so that the piston rod of one cylinder may pass close to the outside of the other cylinder, for the purpose described. 2nd. In a locomotive engine, transmitting power to the axle of a pair of driving wheels, through two cranks set opposite to one another on the axle, on the outside of one only of the driving wheels, substantially as described. 3rd. A locomotive engine having two pairs of driving wheels, one pair driven from one end of their axle through two opposite cranks, and the other pair similarly driven from the other end, and with the space between the two axles occupied by the boiler, substantially as described. 4th. Dividing the smoke-box of the locomotive by one or more fore and aft partitions, with a chimney rising from each division, substantially as described. 5th. Locomotive boilers with fire-grate extended below the whole length of the tubular part of the boiler, so as to be fed from either or both ends, as set forth. 6th. The employment of pawl mechanism, substantially as hereinbefore described, to act on the flange or other part of the tire of the driving wheels of locomotives, to move the locomotives over the dead centres.

No. 28,928. Complimentary Accident Insurance Policy. (*Police complémentaire d'assurance contre les accidents.*)

James F. Leo, Chicago, Ill., U.S., 16th April, 1888; 15 years.

Claim.—1st. A complimentary insurance policy, substantially as set forth, consisting of a card or slip having printed thereon the conditions, and having the underwriter's signature thereon, and space or spaces for affixing the date or time of acceptance, also a card having printed thereon matter so complementary of the first as to identify it as a portion thereof, with space suitably provided for affixing the signature of the insured, and space for affixing the date and hour of acceptance, said cards being secured together with provision for ready separation, and adapted for address and mailing without further provision therefor. 2nd. A complimentary insurance policy, substantially as set forth, consisting of a card or slip having printed thereon the conditions, and having the underwriter's signature thereon, and space or spaces for affixing the date or time of acceptance, also a card having printed thereon matter so complementary of the first as to identify it as a portion thereof, with space suitably provided for affixing the signature of the insured, and space for affixing the date and hour of acceptance, said cards being secured together with provision for ready separation, and adapted for address and mailing without further provision therefor, and a detachable coupon affixed to the cards having printed matter thereon complementary of said cards, whereby its relation to the latter may be es-

tablished, and also having thereon suitable space for affixing the date and hour of the acceptance of the policy. 3rd. An insurance ticket, consisting of a postal card A containing the policy, a postal card B as a means of notification of acceptance, and a coupon C attached to, and forming a connection between said cards, substantially as and for the purpose set forth.

No. 28,929. Reed Organ. (*Orgue.*)

Charles S. Warren, Toronto, Ont., 16th April, 1888; 5 years.

Claim.—1st. In a reed organ, the combination, with the key and stop actions and main wind trunk, of a series of independent sound boards, placed one above the other, each having reed cells and reeds, induction and ejection passages, and separate valves below the several reeds, substantially as and for the purpose specified. 2nd. In a reed organ, the combination, with a series of sound boards arranged one above the other, and having openings at the front for the admission of the reeds, of action rods or wires in connection with the keys and valves in the wind chest, said action rods or wires being located outside of the sound boards and passing vertically between the several reed cells, for the purpose described. 3rd. In a reed organ, the combination, with a sound board and with its valve and pull-down wire, of a pivoted lever extending diagonally beneath such sound board, and an action wire passing outside of same, said lever being in connection with the pull-down and action wire, for the purpose set forth. 4th. The combination, with the sound board, its pull-down and the general action wire, of the diagonal lever U, connected with the pull-down and having a bifurcated end embracing the action wire, substantially as and for the purpose specified. 5th. The combination, with the action wire, having an adjustable stop thereon, and with the sound-board and pull-down a_2 , of the pivoted diagonal lever G, having bifurcated end g_1 , for the purpose specified. 6th. The combination, with the lever G and with the action wire, having fixed thereon the screwed button K, of the split sleeve L surrounding said button and adjustable thereon, for the purpose specified. 7th. In a reed organ, the combination, with the wind chest, of an automatic relief valve to compensate for leakage, substantially as herein specified. 8th. In a reed organ, the combination, with the wind chest A, having orifices a_5 and a_6 , of the relief valve consisting of bellows a_7 , in permanent connection with one orifice, and stop disc a_8 , operated by said bellows and adapted to close the other orifice, substantially in the manner specified. 9th. In a reed organ, the combination, with a series of wind chests, located one above the other, and with a general wind trunk having openings communicating with the ends of said wind chests, of valves covering said openings, and stop levers actuating same, said valves and levers being located within the wind trunk, substantially as and for the purpose described. 10th. In a reed organ, the combination, with the sound board, having a reed-cell open at its front end, of a hinged closure or flap adapted to cover said open end, and a spring for holding same in its open and closed position, substantially as and for the purpose described. 11th. In a reed organ, the combination, with the wind chest of the sound board, of the removable front board a_3 and folding dogs a_4 , for the purpose described.

No. 28,930. Ironing Board and Step-Ladder Combined. (*Planche à repasser et échelle de vitrier combinées.*)

John W. Miller (assignee of Martin L. Connott), Bellefontaine, Ohio, U.S., 16th April, 1888; 5 years.

Claim.—1st. The combination, with the ladder F, of the ironing board A, as and for the purpose set forth. 2nd. The board A, the notches B, the pivoted ladder H, the main ladder F hinged to the board A, as and for the purpose set forth. 3rd. The ironing board A, the ladder F hinged thereto, the sleeve board N and an iron holder M, as and for the purpose set forth. 4th. The board A, the ladder F and the shelf D, as and for the purpose set forth.

No. 28,931. Machine for Trimming the Ends of Billiard Cues. (*Machine à frotter les procédés des queues de billard.*)

William H. Mueller and Henry Butler (assignees of Joseph S. Gold), Columbus, Ohio, U.S., 16th April, 1888; 5 years.

Claim.—The combination of the standard, the revolving disk or wheel provided with a roughened surface upon its inner side, and an adjustable slide provided with holding devices for the cues, substantially as set forth.

No. 28,932. Telephone System.

(*Système téléphonique.*)

The Bell Telephone Company (assignee of Charles W. Brown), Montreal, Que., 16th April, 1888; 5 years.

Claim.—1st. The combination, with a local telephone system in which each station can call and communicate directly with another, of a line connection or closed circuit from an outside exchange entering each station, means in each station to enable it to connect calling circuit of system with such exchange circuit, so as to call exchange without calling other stations, extension bells included in such closed circuit for signalling each individual station from exchange, and means, such as a key in each station, for connecting its telephone circuit with the exchange closed circuit, all as herein set forth. 2nd. In the individual station of a local telephone system, the combination of the individual calling key or terminal, a terminal of one pole of a main battery, and circuit connecting such calling key through spring contact, and telephone hook with one terminal of electro-magnet for operating call bell, the other terminal leading to other pole of said battery, all as herein described. 3rd. In a telephone system embracing, first, a local system, in which one station can call and communicate directly with another, and second, a closed circuit from an outside exchange entering each station, the combination, with such closed circuit, of springs d , d_1 and e , e_1 , forming part of same, all as herein described.

No. 28,933. Barrel and Barrel Hoop.

(*Baril et cercle de baril*)

Hugo Mattallath, Detroit, Mich., U.S., 17th April, 1888; 5 years.

Claim.—1st. The combination, with a wooden barrel, of wooden hoops, some or all said hoops strengthened by an outer band of metal encircling the wooden hoop, the construction being such that said hoops may be driven upon the barrel, substantially as described. 2nd. A barrel hoop consisting of a wooden hoop strengthened by an encircling band of metal and adapted to be driven upon a barrel, substantially as described. 3rd. A barrel hoop consisting of a wooden hoop strengthened by an encircling band of metal, said band adapted to engage the wooden hoop so as to prevent displacement therefrom, substantially as described. 4th. A barrel hoop consisting of a wooden hoop grooved about its periphery, and provided with an encircling band of metal located in said groove, substantially as described. 5th. The combination, with a wooden hoop constructed with an encircling groove, of a metallic band, the ends of said band secured together and fastened upon the hoop by a staple, substantially as described. 6th. A hoop constructed with an encircling metallic band, the ends of said band brought together opposite the free ends of the hoop and united thereto at that point by a staple, substantially as described.

No. 28,934. Spring Tooth Harrow.

(*Herse à dents élastiques.*)

J. O. Wisner, Son & Co., (assignees of Wareham S. Wisner), Brantford, Ont., 17th April, 1888; 5 years.

Claim.—1st. A frame composed of a single metal tube bent to form the front bar D and side bar C, the ends of which latter are rigidly fastened to the bearing boxes A, which are latterly braced by a cross bar E, the tongue F being rigidly fastened to the front bar D and cross bar E, in combination with the frame G hinged on pivots suspended from the front bar D, substantially as and for the purpose specified. 2nd. A frame G carrying the spring teeth H, and hinged on pivots suspended from the front bar D, in combination with the spring bars L rigidly fastened to the bar J, provided with a hand-lever N, arranged substantially as and for the purpose specified.

No. 28,935. Twist Drill Holder.

(*Porte foret à filet.*)

John Carruthers, Prescott, (assignee of Angus Cameron, Galt), Ont., 17th April, 1888; 5 years.

Claim.—1st. An adjustable crank-arm A, carried in a suitable bearing and having a vice formed on its end to receive and hold a drill, substantially as and for the purpose specified. 2nd. An adjustable crank-arm A, carried in a suitable bearing and having a vice formed on its end to receive and hold a drill, in combination with gauge-rods arranged to act as gauges, for longitudinally regulating the drill being ground, substantially as and for the purpose specified. 3rd. An adjustable crank-arm A, carried in a suitable bearing and having a vice formed on its end to receive and hold a drill, in combination with a finger placed on the vice, for the purpose of gauging the position of the point of the drill, substantially as and for the purpose specified. 4th. The crank-arm A, having a vice C formed on its end and journalled in a bearing-box B, in combination with a pivoted handle J, designed to impart a reciprocating movement to the bearing-box B, substantially as and for the purpose specified.

No. 28,936. Hose Clamp for Attaching Hose to Nozzles, Couplings, Hydrants, etc. (*Manchon pour assujettir les boyaux aux lances, joints, bornes-fontaines, etc.*)

Charles Hecox, Midland, Mich., U.S., 17th April, 1888; 5 years.

Claim.—1st. In a hose clamp, the combination, with a split collar, of a curved clamping lever applied thereto, to contract the collar and lock it in its clamped condition, substantially as described. 2nd. In a clamp, the combination, with the split collar, the abutment formed at one end thereof, the clamping lever fulcrumed to the other end and provided with the short arm engaging upon the abutment, the long arm curve to lock the lever in the clamped condition, substantially as described. 3rd. In a hose clamp, the combination, with the split spring collar provided with overlapping ends and adapted to loosely fit the hose, of the abutment formed at one end thereof, and the connecting link pivotally connected to the other end, the curved lever fulcrumed to that link and having the curved locking arm and thumb-piece, substantially as described. 4th. In a hose clamp, the combination, with the split spring collar provided with overlapping ends and adapted to loosely fit the hose, of an abutment formed at one end thereof, the adjustable connecting link pivotally connected to the other end, the curved lever fulcrumed to that link and having the curved locking arm and thumb-piece, substantially as described.

No. 28,937. Horse Collar. (*Collier de cheval*)

James L. Campbell, Monticello, Ga., U.S., 17th April, 1888; 5 years.

Claim.—1st. The horse collar pattern A, formed with the sides rounded at *a*, *a*, the top cut straight, or nearly so, at *a*, *a*, and the bottom cut at an obtuse angle at *a*, *a*, to adapt it to be used as described, whereby two of said patterns may be fitted together with as little seaming as possible, and with a neck-roll, integral with the show, for part. 2nd. A horse collar consisting of two fitted flexible sections A, A, having the outer seam *a*, the straight seam *a*, and the bottom end *a*, *a*, sewed to an intermediate welt F, as shown, whereby it may have flexibility, strength and durability, as set forth.

No. 28,938. Waggon Rack. (*Râtelier de waggon.*)

Richard Caldwell, Tipton, Mich., U.S., 17th April, 1888; 5 years.

Claim.—1st. In a waggon rack, the combination, with the waggon

body, of the side racks D consisting of the stakes G, constructed in two parts hinged together, the upper part having the longitudinal strips J secured to it, and the lower part engaging into keepers on the waggon box, and provided with the elongated slot I and the projection *e*, and the overhanging flange F and the parallel braces A, pivotally secured at their upper ends and connected at their lower ends with a pin or bolt engaging into the slot at the lower part of the stake, all substantially as described. 2nd. In a waggon rack, the combination, with the waggon body, of the side racks D consisting of the stakes G constructed in two parts rigidly jointed together, the upper part having the longitudinal strips J secured to it, and the lower part engaging into keepers on the waggon box, and provided with the projection *e*, and the metallic cap covering the top of the stake and forming a part of the hinge, and having the overhanging flange F, and of the braces A pivotally secured at their upper ends, and connected at their lower ends by a pin or bolt engaging into a slot in the lower part of the stakes, all substantially as described. 3rd. In a waggon rack, the waggon body, the side racks D, the end rails L, M, supported upon the end gates of the waggon and engaging therewith against vertical displacement, the wedge-shaped cleats *n*, the straps *o*, the locking bolts *p*, passing through the strap into the end rack, and the locking bolts *q*, all combined to operate substantially as described. 4th. In a waggon rack, the waggon rack, the side racks D, removably secured to the waggon body, the end rails L, M, supported upon the end gate, and the locking bolt *p*, passing through the side and end racks, substantially as described. 5th. The combination, with the end board B, of the waggon body, the wedge-shaped cleats *n*, secured to the outside of the end board and provided with stops *u*, of the ladder M provided with wedge-shaped lower ends and the locking bolts *o*, all arranged substantially as described.

No. 28,939. Carriage Curtain.

(*Store de voiture.*)

Fowler A. Brandenburg, Vandalia, Ohio, U.S., 17th April, 1888; 5 years.

Claim.—1st. A carriage curtain provided with a retracting spring arranged transversely of the longitudinal axis of the curtain, to permit the same to be stretched and contracted, and the clasps secured to the terminal ends of the said spring, substantially as described for the purpose set forth. 2nd. A carriage curtain provided with a transverse sheath, a spring enclosed within the sheath and arranged transversely of the longitudinal axis of the curtain, and the clasps connected to the terminal ends of the spring, substantially as described. 3rd. A carriage curtain provided with a series of gathers at one edge and a sheath, a retracting spring enclosed within the sheath and arranged transversely of the longitudinal axis of the curtain, to permit the latter to be stretched and contracted, and the clasps connected to the extremities of the spring to connect the curtain to the vehicle top, substantially as described. 4th. As a new article of manufacture, a carriage curtain provided with a transverse retracting spring and a clasp connected to each end of the spring, said clasp being bent from a single piece of wire upon itself to form two arms *d*, *d*, substantially parallel with each other, and an intermediate coil *d*, one of the arms having a hook to connect the clasp to the carriage top, substantially as described. 5th. The combination, with a vehicle top, of a curtain, the retracting spring connected to the curtain, and the clasps detachably connected to the top and secured to the extremities of the spring, substantially as described for the purpose set forth. 6th. A carriage curtain having the retracting spring at or near its upper and lower edges, and the clasps connected to the extremities of the springs, substantially as and for the purposes described.

No. 28,940. Corn-Cob Holder.

(*Poignée d'épis de maïs.*)

Frederic B. Fetherstonhaugh, Toronto, Ont., 17th April, 1888; 5 years.

Claim.—1st. As a holder for hot corn, two uprights having pivoted on their outer end the holding knobs to the spindles of which are secured the plates for holding the corn, in combination with two tubes, one of which fits into and is adjustable lengthwise within the other, substantially as and for the purpose specified. 2nd. The uprights A and B, having plates C, provided with spikes or prongs *e*, the said plates being secured on the ends of the spindles of the knobs D, in combination with the tubes E and F and springs G, substantially as and for the purpose specified. 3rd. The uprights A and B, plates C and knobs D, in combination with the tube E provided with a stop *e*, and the tube F provided with a slot *f*, substantially as and for the purposes specified.

No. 28,941. Safety Lamp. (*Lampe de sûreté.*)

John Davidson and John Taylor, Guolph, Ont., 17th April, 1888; 5 years.

Claim.—1st. In an oil lamp, a removable vessel attached to the burner for holding a quenching fluid, said vessel extending to the top of the wick tube and being open at its top end, substantially as shown and for the purpose set forth. 2nd. In an oil lamp, a quenching fluid vessel attached to a flat wick burner extending upward around and as high as the top of the wick tube, and having its sides bent inward over the wick tube, substantially as shown and for the purpose set forth. 3rd. In an oil lamp having an "Argand" or round wick, a quenching fluid vessel attached to the burner and extending up inside and to the top of the wick tube, above which it is turned outward over the top of the wick tube. 4th. In an oil lamp, the combination of a vessel for holding a quenching fluid and which extends to the top of the wick tube, with a cylindrical tube attached to the walls of the wick tube by the walls of an air passage, and having an open funnel-shaped bottom and a bell-mouth top, substantially as shown and for the purpose set forth. 5th. The combination of the outer wall *r*, of the wick tube, the walls, the air passage M and the quenching fluid vessel E, the tube K having an open funnel-shaped bottom and bell-mouth top with the basket *n*, stem *o*, float *p* and its wire handle *q*, substantially as shown and for the purpose set forth.

No. 28,942. Foot-Guard to be used in Blocking or in place of Blocking Frogs, Switch Rails, etc. (Garde pour rails de croisement, aiguilles, etc.)

Edward P. Edwards, Webster, Iowa, U.S., 17th April, 1888; 5 years.

Claim.—A foot guard for railway tracks, consisting of a metal plate narrowed from one end to the other, having lateral flanges adapted to be fitted beneath the ball of the rails, whereby the base of the plate is fixed approximately at the surface level of the ties, and its central corrugation rising from the plate, which corrugation gradually decreases in height from the narrow to the broad end of the plate, and at its lower end is merged into the plate, substantially as and for the purposes herein set forth.

No. 28,943. Heating Stove and Pipe Attachment thereto. (Poêle de chauffage avec tuyaux de distribution.)

Robert Horning, Grimsby, Ont., 17th April, 1888; 5 years.

Claim.—In a heating stove, as shown on drawing, the series of tubes B, formed around the sides of the stove into which the cold air enters through the ducts c, in the bell mouths L, and is conveyed into the air chamber R, in connection with the elbow pipe D and pipe F, with the exit pipes H and I, as set forth.

No. 28,944. Electric Train Signal Apparatus (Appareil électrique de signal de chemin de fer.)

Joseph C. Tiffany and John R. DeMier, Las Cruces, N. M., U. S., 17th April, 1888; 15 years

Claim.—1st. The electric signalling coupling, comprising the separated coupling head portions B, B₁, switch spring B², and guiding ribs b₂, and the coupling portion C having an insulating handle portion with circuit wires secured in it, two separated conducting portions c₁, c₂, formed with guiding grooves or corrugations, and a switch spring c₁ with non-conducting circuit opening button extending into one of the corrugations or grooves, substantially as and for the purpose described. 2nd. The combination of the coupling head, composed of two parts, with a spring contact device also composed of two parts, one of which comprises a spring arm arranged upon one part of the coupling head, and the other a spring stop arranged upon the other part of the coupling head, substantially as and for the purpose described. 3rd. The combination, with the signalling coupling, comprising portions B, B₁ and C, and springs b₂ and c₁, of a switch spring b₁ and a spring contact device b₂, substantially as and for the purpose described. 4th. The combination of the electrical signalling coupling apparatus, comprising parts B, B₁ and C, provided respectively with switch springs, and one with circuit wires, of the switch spring b₁, spring b₂ and pull-rod E, substantially as and for the purpose described. 5th. The automatically separating electric coupling, comprising the portions B, B₁ and C, which are respectively provided with a switch spring, as b₁ and as c₁, whereby, when the cars of a train separate or become derailed, a continuous signal can be sounded, substantially as described. 6th. In the described electric signal apparatus, the switch spring b₁ having handle b₁ and spring contact device b₂, substantially as and for the purpose described. 7th. The switch spring b₁ of the signal apparatus, provided with a hook e and pendant handle b₁, in combination with the contact spring b₂ and pull cord E, substantially as and for the purpose described. 8th. The combination of the pull rope E, the contact spring b₂, switch spring b₁, coupling B, B₁, C, circuit wires and a signal gong or an alarm, whereby the ordinary pull rope can be used for operating the apparatus, substantially as and for the purpose described.

No. 28,945. Gas Engine. (Machine à gaz.)

Lewis T. Cornell, Chicago, Ill., U.S., 17th April, 1888; 5 years.

Claim.—1st. In a gas engine, the working cylinder, the compressing cylinder, an inlet port and a passage and induction port connecting said cylinders, in combination with an automatic valve having a connecting chamber alternately connecting said inlet port and passage, and the passage and induction port, substantially as described. 2nd. In a gas engine, the working cylinder, the compressing cylinder, an induction port for the compressing cylinder, and an inlet port, in combination with a double piston working in said cylinders, and an automatic slide-valve adapted to connect, first, the inlet port with the passage, and then the passage with the induction port, whereby said piston, during the outstroke, will draw in through the passage into the working cylinder a fresh supply of the explosive mixture, and during the instroke will transfer and forcibly inject the same into the compressing or exploding cylinder, substantially as described. 3rd. In a gas engine, the working cylinder, the compressing cylinder and a passage and induction port connecting said cylinders, in combination with a valve intermediate said passage and induction port having a connecting chamber extending transversely through said valve, and a pocket registering with said chamber when connecting said passage and induction port, whereby said pocket may receive a charge of the explosive mixture, substantially as described. 4th. In a gas engine, the working cylinder, the compressing cylinder, an inlet port and a passage, and induction port connecting said cylinders, in combination with an automatic slide-valve having a connecting chamber intermediate said inlet port and passage, or induction port and passage, a double piston working in said cylinders, a keeping plate for said valve, and a pocket in said keeping plate registering with the connecting chamber in said valve, when connecting the passage and induction ports, substantially as described. 5th. In a gas engine, the working cylinder, the compressing cylinder and the passage and induction port connecting said cylinder, in combination with the double piston working in said cylinders, the pocket and the automatic slide valve having the connecting chamber and flame-jet located in a transverse slot, substantially as described. 6th. In a gas engine, the compressing cylinder or exploding chamber, and the induction and eduction ports on either side thereof, in combination

with a longitudinal division plate or deflector in said cylinder interposed between said induction and eduction ports, substantially as described. 7th. In a gas engine, the compressing or exploding chamber and the induction and eduction ports on either side of said cylinder, beyond the limit of the forward or instroke of said piston, in combination with a longitudinal division plate or deflector in said cylinder intermediate the induction and eduction ports, substantially as described. 8th. In a gas engine, the working cylinder, the piston thereof and the passage leading to the compressing cylinder, in combination with the compressing cylinder, the piston thereof, the induction and eduction ports on either side of said cylinder, and the longitudinal division plate or deflector intermediate said ports, substantially as described. 9th. In a gas engine, the compressing cylinder, the piston thereof, the induction port and the valve for opening and closing said port, in combination with the deflector or division plate and eduction ports, all of which are adapted to be automatically closed just prior to the completion of the instroke of the piston, whereby the gas contained in said cylinder will be compressed during the rest of the stroke, substantially as described. 10th. In a gas engine, the compressing cylinder, the piston thereof and the induction port located forward of the instroke of said piston, in combination with the deflector or division plate, and one or more eduction ports, all except one of which are located within, and closed by, the stroke of the piston, which latter is automatically closed just prior to the completion of the stroke of the piston, whereby a supply of fresh gas will enter the exploding chamber through the induction port, be deflected forward and along the walls of said chamber, and hence force the exploded gas first out through the eduction ports closed by the piston, and then through the automatically closing eduction ports until this latter port is closed, after which the induction port will be closed and the remainder of the stroke serve to compress the gas in the cylinder, substantially as described. 11th. In a gas engine, the combination of the cylinders D and E, piston F, passage H, induction port I, valve J having connecting chamber K, jet c and slot L, pocket N, deflector i and eduction ports g and g₁, substantially as described. 12th. In a gas engine, the working cylinder, the compressing cylinder, a combined gas and air inlet port, and a passage and induction port connecting said cylinders, and an automatic slide-valve having a connecting chamber alternately connecting said inlet port and passage, and the passage and induction port, in combination with a spring actuated slide-valve carried by, and working in, the chamber of said automatic valve, a valve rod secured to the spring actuated slide-valve and projecting beyond the automatic valve, and a governor rod adapted to be depressed by the speed of the governor to project in the path of travel of said valve rod, whereby the spring actuated slide valve will project over, and seal the mouth of the passage at each stroke of the automatic slide-valve, substantially as described.

No. 28,946. Waggon and Carriage Tongue Supporter. (Support de timon de voiture.)

Thomas T. Cunningham, Osceola, Mo., and Jerry W. Donovan, Olatho, Kan., U.S., 17th April, 1888; 5 years.

Claim.—1st. A vehicle tongue supporter consisting of a spiral spring enclosing two oppositely extending metallic loops, having their free ends bent into hooks, which retain the end coils of the spring and their looped or linked ends attached to chains, one permanently connected with a plate on the top of the front bolster of the vehicle, the other adjustably connected with a like plate on the evener, which evener is secured to the tongue to elevate the pole to any desired pitch, all substantially as described. 2nd. In a vehicle tongue supporter, the combination of the enclosing spiral spring A, the loops B and B₁, passing through the spring and having the hooked ends b and b₁, the chains C and G, the former connecting with the bolster plate, and the latter having the hook c arranged to pass through a loop or eye on the evener plate and connect with one of the links of said chain, all substantially as described. 3rd. The encircling spring A, in combination with the loop B and B₁, passing through said spring and retaining it by their hooked end abutting against the end coils of the spring, the chains C and G, the latter arranged to regulate the elevation of the tongue by the adjustment of the hook c, through the loop on the evener plate and one of the chain links, the said evener plate H and the bolster plate D, having the eye or loop d, all substantially as described.

No. 28,947. Horse-Shoe. (Fer à cheval.)

John D. Billings, New York, N.Y., and William D. Murray, Plainfield, N.J., U.S., 17th April, 1888; 5 years.

Claim.—1st. As a new article of manufacture, a rolled horse-shoe consisting of an upper foot bearing surface, having a flat and level outer portion, both portions terminating in a level surface at the heels, a raised under portion C, the toe calks D arranged on either side of the centre of the toe and at an equal distance therefrom, the projecting portion d between said toe calks, the heel calks E, arranged on either side of the heel points and at an equal distance therefrom, the ground surface of the toe calks being at least twice as thick as the ground surface of the heel calks, and the grooved nail rim with the inner walls of the run and the calk bearing portion C bevelled toward the said groove, substantially as described. 2nd. In a rolled horse-shoe, the upper foot bearing surface having a flat and level outer portion and a sloping inner portion, both terminating in a level surface at the heels, the grooved nail rim, the under calk supporting portion with its sides between the toe calks, and the heels made sloping toward said rim, and the four toe and heel calks occupying the same relative positions and distances from the toe and heel points, as shown and described.

No. 28,948. Thrashing Machine Tooth.

(Dent de machine à battre.)

John A. Beam, Waterloo, Ont., 18th April, 1888; 5 years.

Claim.—1st. In a fastening for thrashing machine tooth, the tapering shank B of the tooth seated in the bar, and provided with the key way E and locking key F, substantially as described. 2nd. In a fastening for thrashing machine teeth, the tooth A provided with the

tapering shank B, the tapering fins D, the seat in the bar, the key way E and key F, the parts being arranged to operate substantially as described.

No. 28,949. Truss. (*Bandage herniaire.*)

George Wilkinson, Wellsborough, Penn., U. S., 18th April, 1888; 5 years.

Claim.—The truss, herein described, consisting of a flat spring, carrying the back pad, and a round spring carrying two hernia pads, said springs adjustable in pressure at the hinge joint, and the front spring inwardly convexed to form seats for the pad-holders, as shown and described.

No. 28,950. Bushing for Bung-Holes of Fluid Casks. (*Debonde de fût*)

Oscar Eisenhuth, Detroit, Mich., U. S., 18th April, 1888; 5 years.

Claim.—In combination with the cylinder having the collar formed integral therewith, also flange a, the wooden ring B, the ring C adapted to be screwed into the cylinder over the wooden ring, as and for the purposes specified.

No. 28,951. Snow Plough. (*Charrue à neige.*)

Mathias B. Eaton, Boston, Mass., U. S., 18th April, 1888; 5 years.

Claim.—1st A one-sided railway snow plough having the point as described, the concave mould board, the bottom slightly flattened, the top projection concave side downward, the opposite or straight side of the plough extending outward at an angle to the line of direction of the moving plough, and inclined from a perpendicular inward, and the rear shields extending beyond the head of the locomotive, all substantially as and for the purposes hereinbefore set forth. 2nd. In a snow plough for use on railways, the combination, with suitable truck frame upon which the plough is mounted, of wheels having a flange and cutters radially arranged on the inner side of said wheels, and secured thereto by clamps or bolts, substantially as and for the purposes hereinbefore set forth. 3rd. In a railway snow plough, the combination, with the truck frame and cutter wheels as described, of trays placed in front of said wheels and attached to the frame by spring or flexible connections, all substantially as and for the purposes hereinbefore set forth. 4th. In a railway snow plough, the combination, with the truck frame and cutter wheels as before described, of drays behind said wheels and attached by spring or flexible connections to the frame, all substantially as and for the purposes hereinbefore set forth. 5th. In a railway snow plough, the combination, with truck frame, cutter wheels and rear dray, as described, of a flexible wire broom attached to the frame, substantially as and for the purposes hereinbefore set forth. 6th. A snow plough mounted on suitable trucks, and having an internal cavity and a fire within said cavity, whereby the mould-board can be heated, all substantially as and for the purposes hereinbefore set forth.

No. 28,952. System of Water Supply.

(*Système de service d'eau.*)

William G. Russell, Millbrook, Ont., 18th April, 1888; 5 years.

Claim.—1st. The pipes A, B, C and E, connected together, as described, in combination, with the globe-valve F, arranged substantially as and for the purpose specified. 2nd. The pipes A, B, C and E, connected together, as described, in combination with the globe-valve F and rod G, arranged substantially as and for the purpose specified. 3rd. The pipes A, B, C and E, connected together, as described, in combination with the globe-valve F, rod G, and relief valve H provided with a lever I and adjustable weight J, substantially as and for the purpose specified. 4th. The pipes A, B, C and E, connected together, as described, in combination with the globe-valve F, rod G, relief valve H provided with a lever I and adjustable weight J, and set-screws K and L, substantially as and for the purpose specified.

No. 28,953. Folding Coop or Crute.

(*Fût ou manne plants*)

William E. Tate, Weatherford, Texas, U. S., 18th April, 1888; 5 years.

Claim.—1st. The combination, in a coop, of the bottom, sides and ends, the top formed in sections hinged together, whereby one section may be raised without the other, and the partition dividing the coop into compartments and arranged at the juncture of the sections of the top, substantially as set forth. 2nd. In a folding coop, the combination of the bottom, sides, ends and top, the latter being formed in sections, and the partition connected with the top at the juncture of its sections, whereby to support such sectional top, substantially as set forth. 3rd. The combination, with the ends, the sides, the top and the partition, of the bottom formed of sections hinged together and provided at their hinged or abutting edges with hooks for engaging and securing the lower edge of the partition, substantially as set forth. 4th. In a folding coop, the combination of the sides, the bottom, the end pieces, the top sections, and the partition having short bars or arms d secured between their ends to the partition projected to the opposite sides of said partition, and pivotally connected at their ends to the sections of the top, substantially as set forth. 5th. In a coop, the combination of the bottom sections hinged together and provided at their hinged or abutting edges with catches for securing the partition, the ends, the sides hinged to the bottom, and the top hinged to one of the ends and provided with the partition, substantially as set forth. 6th. The improved coop herein described, consisting of the bottom sections A, A', hinged together, the side B hinged to section A, the side B' hinged to section A', the ends E hinged to side B, and the partition connected with the top sections at the point of connection of the latter, substantially as set forth.

No. 28,954. Extension Ladder.

(*Echelle à rallonge.*)

John L. Craft, Somerville, Mass., U. S., 18th April, 1888; 5 years.

Claim.—1st. An extension ladder consisting of a lower section and

an upper or movable section, the upper rounds of the lower section being provided with one or more hooks secured to a rotary round in said last mentioned section, and adapted to engage and hold the rounds of the upper section, and a spring connected at its lower end with said rotary round, and at its upper end to a rigid round in the same section, whereby the hooks may be held pressed outward or forward, and ice freezing on the device will not be liable to interfere with the operation of the spring, substantially as set forth. 2nd. In an extension ladder, the combination, of the upper or sliding section, the lower or supporting section, the operating cord or chain secured at one end to the upper portion of the lower section, and passing thence downwardly and through a hollow round in the lower portion of the upper section, and thence upwardly over a pulley at the upper portion of the lower section, its free end depending from said pulley, and means, substantially as set forth, connected with the upper end of the lower section for engaging and holding the upper or movable section, substantially as and for the purposes hereinbefore set forth. 3rd. An extension ladder having an operating cord, rope or chain attached to the upper end of its lower or stationary section and passing from thence downward through a hollow round in the lower portion of the upper section, and from thence upwardly over a pulley at the upper end of the lower section, substantially as set forth. 4th. The lower section, a cord, rope, or chain attached to the upper end of one of the side pieces of said section, a pulley arranged in the upper end of the other side piece of said section, an upper section having a hollow round and a pulley attached to each side piece at the ends of said hollow round, said cord being arranged to pass over the pulleys of said upper section through the hollow round thereof, and over the pulley arranged in the upper end of one of the side pieces of the lower section, all constructed, combined and arranged substantially as and for the purposes set forth. 5th. The lower and upper sections, hooks m, round n, spring q and round r, constructed, combined and arranged substantially as and for the purposes set forth. 6th. Hooks m provided with lips r, dogs t pivoted to hooks m and springs u, constructed combined and arranged substantially as and for the purposes hereinbefore set forth. 7th. The upper section having the hollow round, provided at its ends with pulley-containing chambers fitted in mortises in the side pieces of said section, as set forth.

No. 28,955. Type Writing Machine.

(*Graphotype.*)

Lafayette Hanchett, Empire, Col., U. S., 18th April, 1888; 5 years.

Claim.—The improved indicating attachment for type-writing machines herein described, consisting of the clamp plates A, having opening h and provided with slots h', cut from their edges and adapted to receive a part of the framing of the machine, the screws m turned through plates A into slots h', whereby, to band the plates in place, the supporting bar B having its ends fitted to enter the opening h in the clamp plates, and the indicators supported on said bar B, substantially as and for the purposes specified.

No. 28,956. Cross-Cut Saw. (*Scie le travers.*)

Pierson Jacobus, Varick, N. Y., U. S., 18th April, 1888; 5 years.

Claim.—A cross-cut saw having cutting teeth in combination with chisel or cleaning teeth, the chisels being arranged in pairs, the two teeth of each pair slanting in opposite directions, and the side edges of each chisel tooth being straight and parallel, substantially as shown and for the purposes specified.

No. 28,957. Sleigh Knee. (*Courbe de traineau.*)

Edward King, Butte, Mont., U. S., 18th April, 1888; 5 years.

Claim.—1st. The combination of the bolster, the knee and the braces H secured to the sides of the knee, and having the threaded upper ends passed through the bolster, and the nuts thereon for clamping the knee and the bolster together, substantially as described. 2nd. The combination of the runner, the brace B and the vertical rods D, with the bolster having the openings to receive the rods and bearing under the brace, the knee, the plate G on the lower end thereof having the recesses to receive the rods D, and the side braces H secured to the knee and having their upper ends extending through the bolster and provided with clamping nuts, and having the lower depending ends on opposite sides of the runner to prevent lateral play of the latter, substantially as described.

No. 28,958. Stop Motion for Spinning, Twisting, Doubling and Winding Machines. (*Mécanisme casse-mèche de machines à filer, retortir, doubler et renvider.*)

William C. Sanford, Amsterdam, N. Y., U. S., 18th April, 1888; 5 years.

Claim.—1st. The combination of the nipping plate E, nipping plate d' and weighted lever F, the said plate E being formed with a slotted extension, as e', e, and with a jaw e', and pivoted to the plate d' while the plate d' is provided with a slot, as d', and the lever F connected by one of its ends to the plate E, while its other end is pendant and rests upon the threads of yarn being twisted, substantially as and for the purpose described. 2nd. The vibrating nipping plate E and a gravitating lever F, in combination with a nipping and guiding plate d', the said vibrating plate being pivoted to the plate d' and moving on its pivot in a transverse direction to that in which the threads are fed to the twisting mechanism, and thereby causing the broken ends of the threads to be moved laterally between itself and the plate d' and nipped firmly, substantially as and for the purpose described. 3rd. The combination of the vibrating nipping plate E formed with a jaw e' and an extension e' having a slot e', the nipping and guiding plate d' and the gravitating lever F, the latter hung on a pivot and swinging transversely to the direction in which the plate E moves, substantially as and for the purpose described. 4th. The weight f pivoted to the plate d' and the gravitating lever F hooked or bent on its forward end and having its rear end passed through the

weight above the pivot thereof, the vibrating nipping plate E pivoted at *ds* and provided with a slotted extension and connected to the rear end of the lever F, by said slotted extension, and the guiding nipping plate *dt*, all combined and operating substantially as described. 5th. The vibrating nipping plate E, formed with a jaw *et* and an extension *es* having a slot *ez*, the nipping plate *dt* provided with a pivot *dt*, on which the plate E is hung and vibrated, and with a slot *dz*, the lever F and the weight F, said lever having its rear end passed through the pivoted weight *f* and into the slot *ez* of the plate E, in a direction transverse to the pivot of the weight and the movement of the plate E, and having its front end adapted to rest upon the threads being fed to the twisting machine, the whole combined and operating substantially as described.

No. 28,959. Combined Letter Sheet and Envelope. (*Papier à lettre-enveloppe.*)

Henry D. Lefevre, Bay, Mich., U.S., 18th April, 1888; 5 years.

Claim.—1st. In a combined letter sheet and envelope, the head portion *a* and the sheet portion *b*, in combination with a flap *c* provided with an opening *f*, a flap *d* provided with an opening *g*, and a flap *e* provided on its outer free end with a gummed portion *h* of a dimension less than the openings *f* and *g*, substantially as and for the purpose set forth. 2nd. In a combined letter sheet and envelope, the head portion *a*, the sheet *b*, the flap *c* provided with the opening *f*, the fold *d* provided with an opening *g*, and a flap *e* provided on its outer end with the gummed portion *h* passed through the openings *f* and *g* and secured to the folded sheet, in combination with a portion *i* of the flap *e* partially cut out, and with its inner side adhering to the flap near the portion *h*, substantially as and for the purpose set forth.

No. 28,960. Mode of Packing Fire Wood.

(*Procédé d'empaquetage du bois de chauffage*)

Elzéar Delsic, St. Maurice, Que., 18th April, 1888; 5 years.

Résumé.—Le procédé d'empaquetage du bois de poêle au moyen d'un brancard composé de montants B, C, D, E, F, G, H, I, L, de traverses J, K et de barres secondaires K, ou son équivalent, tout tel que ci-dessus décrit et pour les fins sus-mentionnées.

No. 28,961. Wire Straining Machine.

(*Machine à tendre le fil de fer.*)

John B. Evans, Mabus, Cape of Good Hope, 18th April, 1888; 5 years.

Claim.—1st. In a ground wire straining machine, the combination of a ratchet chain wheel and chain, with driving and retaining pawls and hook catch, as shown and described. 2nd. The combination of a ground wire straining machine, with an earth anchor, hauling chain and guide pulley, as shown and described. 3rd. The combination of a chain and grippers reeved through a pulley for straining fence wires, as shown and described.

No. 28,962. Lumber Cart. (*Charrette à bois scier.*)

Thomas B. McFaul, Willis Hand, and George W. Bartoe, Phillips, Wis., U.S., 15th April, 1888; 5 years.

Claim.—1st. A lumber cart, made with a frame supported on a two-wheeled truck, and provided at the end with a trailing wheel, and provided also with a transverse peripherally toothed roller, substantially as shown and described. 2nd. A lumber cart made with a frame supported on a two-wheeled truck, and provided at the end with a trailing wheel, and provided also with an intermediate transverse peripherally toothed roller, and at the ends with plain faced rollers, substantially as shown and described. 3rd. A lumber cart, made with a frame supported on a two-wheeled truck, and provided with a trailing wheel, and provided also with a transverse peripherally toothed roller, and mechanism for locking said roller against rotation at will, substantially as shown and described. 4th. A lumber cart, made with a frame supported on a two-wheeled truck, and provided at the end with a trailing wheel, and provided also with an intermediate transverse peripherally toothed roller, and mechanism for locking said roller against rotation at will, said frame provided also at the ends with plain-faced rollers, substantially as shown and described. 5th. A lumber cart made with a frame supported on a two-wheeled truck, and provided at one end with a trailing wheel and with a transverse peripherally toothed roller, said frame having a slotted construction at the sides of the toothed roller, substantially as shown and described. 6th. A lumber cart made with a frame A, supported on a two-wheeled truck, and provided with a peripherally toothed roller G, in combination with a locking-pin J fitted in the frame and adapted to engage the roller, substantially as shown and described. 7th. A lumber cart made with a frame A, supported on a two-wheeled truck, and provided with a peripherally toothed roller G, in combination with a locking-pin J and a spring-pressed retaining lever K adapted for operation to lock and unlock the roller, substantially as shown and described. 8th. The combination, in a lumber cart, of a frame A, supported on a two-wheeled truck B, C, C', and having a trailing wheel N, an intermediate toothed roller G, and plain end rollers E, F journalled to the frame, a pin J and lever K for locking and releasing the roller G, and the frame provided between the rollers with longitudinally ranging slats D, substantially as shown and described.

No. 28,963. Rotary Excavator for Removing Snow. (*Fouilleur rotatif pour enlever la neige.*)

Edward Leslie, Orangeville, Ont., 18th April, 1888; 5 years.

Claim.—1st. In an excavator a revolving wheel provided with radial fans, and two sets of knives or cutting blades held in front of said wheel, substantially as shown and described. 2nd. In an excavator, the combination, with a revolving wheel provided with radial fans, and a cone in its centre in front of an outer set of knives held in front of said wheel, and in front of the fans, and a second or

inner set of knives forming an opening to the inside of the wheel, substantially as shown and described. 3rd. In an excavator, the combination, with a revolving wheel provided with a hub carrying an inner disk, of a second hub fastened to the front of the first-mentioned hub, and having radial arms or spokes, a ring secured to said radial arms or spokes, radial fans secured to said ring and to said disk, an outer ring held in front of said fans, and two sets of knives, of which the outer set is held in front of said fans, and the other set is held between the inner ring and the hub, substantially as described. 4th. In an excavator, the combination, with a revolving wheel provided with a hub carrying an inner disk, of a second hub fastened to the front end of the first named hub and having radial arms or spokes, a ring secured to said radial arms or spokes, radial fans secured to said ring and to said disk, an outer ring held in front of said fans, two sets of knives, of which the outer set is held in front of said fans, and the other set is held between the inner ring and the hub, and a cone held in front of the second hub, so that the snow from the cone passes into the inner set of knives, substantially as shown and described. 5th. In an excavator, the combination with a revolving wheel, of radial fans held on said wheel, and two sets of self-reversing knives held in front of said wheel, substantially as shown and described.

No. 28,964. Filtering Apparatus. (*Filtere.*)

John Howes, Worcester, Mass., U.S., 18th April, 1888; 5 years.

Claim.—1st. A filter consisting of a cylindrical tube of filtering material, supported internally by a shaft having a helical flange or rings, which separates the space within the tube into a helical channel or channels, through which the liquid is introduced and flows along the surface of the filter for outward filtration therethrough, substantially as hereinbefore described. 2nd. A filtering apparatus consisting of an enclosing case or cylinder, having its interior space separated into chambers, as E, H and G, and provided with inlet and outlet passages, as set forth, in combination with a series of tubular filters, each supported by an internal shaft having helical channels *f* through which the liquid can flow freely from one of the chambers F to the other chamber H, and from which chamber the liquid percolates through the filters to the surrounding chamber G, substantially as hereinbefore described. 3rd. The combination, substantially as hereinbefore described, with the body cylinder A, base A', and cap A', and partition plates *a* and *a'*, having openings *e*, of a filter composed of a standard having a helical rib, and continuous spiral channel leading from the openings in one plate *a* to the openings in the other plate *a'*, and the tubular fabric D surrounding said standard and supported by its rib, and the chamber G between said filter, and the body cylinder from which the filtered water is withdrawn. 4th. The combination, substantially as described, with the base A', cap A' and enclosing cylinder A, of the hollow shaft F having a helically disposed flange and intervening channel *f*, the tubular filter D surrounding said shaft, and the connecting bolt J passing through the centre of said shaft and connecting the parts, in the manner set forth. 5th. A filtering apparatus having a supply chamber E, filtrate chamber G and discharge chamber H, with inlet and outlet passages, disposed as shown, and a tubular filter extending through said filtrate chamber with its ends opening respectively into said supply and discharge chambers, and forming a communicating passage between the chambers and stop valves or cocks *h* and *h'*, arranged for operation substantially as shown and described. 6th. The combination as described, in a filtering apparatus, of the helically flanged standard, having annular supporting ends, with openings or passages therethrough, the tubular felt surrounding said standard, and the adjustable clamping hoop, formed as indicated, surrounding and binding the ends of the felt tube to the periphery of said annular supporting ends, for the purpose set forth.

No. 28,965. Stove and other Pipes.

(*Tuyau de poêle et autres*)

Henry W. Moyer, Camden, Ont., 18th April, 1888; 5 years.

Claim.—1st. A stove pipe, formed as shown, with an inward projection *b* at small end in the lock, and an outward projection *c* near the bottom also in the lock without rivets, substantially as and for the purpose specified. 2nd. In stove pipes, forming projections *c, c, c,* in every two lengths, for securing them together in long lengths after being formed, substantially as and for the purpose specified.

No. 28,966. Apparatus for Mechanical Waiting at Meals. (*Appareil mécanique de service à table.*)

Arthur L. Smith, Montreal, Que., 18th April, 1888; 5 years.

Claim.—1st. The combination of the kitchen and dining room, arranged with a continuous table extending through both, as described, having a continuous line of rails extending around on the said table, and arranged for a locomotive engine and cars to run thereon with said locomotive engine and cars, the whole substantially as and for the purpose set forth. 2nd. The combination, in a locomotive engine, of the pipe H, L, with the cars having steam spaces F₁, and with a table provided with rails I, the whole substantially as described. 3rd. The combination, in a steam boiler having flue C₁, with a heater A₄ being heated to such a temperature as to generate the steam required to actuate an engine, and draw the cars on a track, the whole substantially as described. 4th. The combination, in a locomotive engine and train of cars, of the pipe H with the cylinders D₁, by which the exhaust steam from the cylinders is conveyed to the spaces F₁ of the cars, with said spaces F₁, the whole substantially as and for the purpose set forth.

No. 28,967. Sewing Machine Motor.

(*Moteur de machine à coudre*)

William H. Clayton, Villa Rica, Ga., U.S., 19th April, 1888; 5 years.

Claim.—In a sewing machine motor, the combination of the main frame, having a standard provided with a depending yielding arm 26,

a curved regulating lever 23, provided with an adjusting device at its lower end, and secured to said arm 26, an arm 27 pivoted to lever 28, a shaft 15 journaled in the arm 26 and 27, and bearing a pinion and a pulley, a wheel 4 adapted to engage with the teeth of pinion 6 and applied on a shaft bearing a spur wheel 7 engaging with a spur wheel 3, a spur wheel 16, and engaging with wheel 3 keyed on shaft 18, a worm wheel also applied on this shaft and provided with a driving spring, and a worm pinion keyed on an endwise adjustable winding up shaft, all constructed and adapted to operate substantially as described.

No. 28,968. Nail. (Clou.)

Joseph W. Higgs, Sharon, Penn., U.S., 19th April, 1888; 5 years.

Claim.—A nail or spike, having a countersink or depression formed in its head, substantially as and for the purpose specified.

No. 28,969. Chemical Fire Kindler.

(*Allumoir chimique.*)

Nils Johanson, Muskegon, Mich., U.S., 19th April, 1888; 5 years.

Claim.—A fire kindler composed of a package of excelsior, shaped in a mould, and steeped in a hydro-carbon, substantially as and for the purpose described.

No. 28,970. Steam Trap. (Trappe de vapeur.)

Joseph Rehm, Buffalo, N.Y., U.S., 19th April, 1888; 5 years.

Claim.—A tubular frame having a passage leading from the inlet pipe to the valve chamber, and from the valve chamber to the outlet pipe, and having an adjusting rod passing across and connecting with opposite sides of said tubular frame by right and left hand screw portions, in combination with a connecting rod located at right angles, or substantially so, to the adjusting rod, and having one end connected to one side of said frame, and the other end with a valve rod and valve, and a stuffing box for keeping a tight joint around the valve stem, substantially as described.

No. 28,971. Tobacco Pipe. (Pipe de fumeur.)

Honry Spring, Brigg, and Algernon Kirkham, Broughton, Eng., 19th April, 1888; 5 years.

Claim.—In a tobacco pipe, the combination of the bowl A open at both ends, and of the plug C adapted to be screwed or tightly fitted into one or both ends of said bowl, substantially as and for the purposes hereinbefore set forth, and illustrated in the drawings hereunto annexed.

No. 28,972. Oar-Lock. (Toiletère.)

Alfred H. Tompkins, Brooklyn, N.Y., U.S., 19th April, 1888; 5 years.

Claim.—1st. In an oar-lock, the combination, with an essentially U shaped frame adapted to be mounted in a boat gun-wale, of a hinged ring provided with trunnions pivoted to rock in said frame, an inner hinged ring adapted for attachment to an oar revolving independently within the outer ring, and means, substantially as shown and described, for rotating the outer ring in the frame, as and for the purpose specified. 2nd. In an oar-lock, the combination, with the hinged ring A provided with an exterior integral flange B, and an outer hinged ring D adapted to receive inner ring A and provided with trunnions d, of the U-frame E provided with journals F, E, adapted to receive said trunnions, substantially as herein shown and described. 3rd. In an oar-lock, the combination, with the hinged sectional ring A provided with an exterior integral flange B, and adapted to clamp an oar, an outer hinged sectional ring D provided with trunnions d, and means for securing the ends of said sectional rings, of the U-frame E, provided with a covered journal F, and an opposite journal F' having a hinged cap N adapted to receive said trunnions, substantially as shown and described for the purpose set forth. 4th. In an oar-lock, the combination, with the hinged sectional ring A adapted to clamp an oar, and provided with an exterior integral flange B having a recess b, an outer hinged sectional ring D provided with trunnions d, and means for securing the ends of said sectional rings, of the U-frame E, provided with a covered journal F, and an opposite journal F' provided with a hinged cap N, and a spring P adapted to control said cap, substantially as shown and described and for the purpose herein set forth. 5th. The combination, with an oar M, of a sectional ring A adapted to clamp said oar, provided with an exterior integral flange B having a recess b, and an outer hinged sectional ring D provided with trunnions d, substantially as shown and described. 6th. The combination, with the U-frame E, provided with a closed journal F having a recess f, and the opposite journal F' having a cap N hinged thereon, provided with a longitudinal groove m, and a spring P having a projection P' adapted to enter said groove, of the inner ring A adapted to clamp an oar, provided with an integral annular flange B, and the outer sectional ring D provided with integral trunnions d adapted to enter said journals, substantially as shown and described.

No. 28,973. Composite Pier for Bridges, etc.

(*Pile composite pour ponts, etc.*)

August Boraeman, Lancaster, Ohio, U.S., 19th April, 1888; 5 years.

Claim.—1st. The composite pier, shaft or pillar consisting of the combination, with the wooden pile 1 bound with grummet 2, of the hollow metallic column 3 having the lugs 10 that project inwardly and downwardly from the shoulder 9 of the enlarged chamber 5, whose interstice surrounding the pile-head is filled with hydraulic cement 11, as and for the purposes set forth. 2nd. The combination in the hollow metallic column 3, of enlarged chamber 5, whose shoulder 9 has the inwardly and downwardly projecting lugs 10, as and for the purpose set forth. 3rd. In a hollow metallic column 3, the combination of the following elements, to wit: the enlarged chamber 5, whose shoulder 9 has the inwardly and downwardly projecting lugs 10, said chamber terminating in the splay or saucer-shaped foot 12, as and for the purpose set forth. 4th. The hollow shaft or column hav-

ing in the described combination, the integrally cast enlargement 8, inferior lugs 10, crowning fillet 1 and exterior lugs or brackets 13, 15, 5th. The combination, with a wooden pile, of the hollow metallic column 3 which has at its lower end the enlarged chamber 5, provided with the lugs 10 and terminating in the splay-foot 12 in the form of an inverted saucer, said column being crowned with the fillet 1-3-6, and having one or more inferiorly cast lateral projections or brackets 13, 15. 6th. The composite pier, pile or column composed of the combination, with a grummetted wooden pile 12, of the superimposed hollow metallic shaft or column consisting of the integrally cast parts as follows, to wit: the main portion or shaft proper 3, the enlarged portion 8, the foot 12, the perforated crown or fillet 4-5-6, and one or more lateral projections or lugs 13, 15, the interstice between the head of the pile, and the entire 1 portion 8 being charged with hydraulic cement, in the manner set forth.

No. 28,974. Wheel for Vehicles, etc.

(*Roue pour voitures, etc.*)

Joseph N. Clouse, St. Louis, Mo., U.S., 19th April, 1888; 5 years.

Claim.—1st. In a metal wheel for vehicles and other uses, the box C, with sand-band e, flange and arms or wedges D, D, etc., in combination with the nut H, and flange F with its arms or wedges D, D, etc., substantially as described and specified. 2nd. In a metal wheel for vehicles and other uses, the box C, with its sand-band e, flange and arms or wedges D, D, etc., stop I, nut H, flange F, with its arms or wedges D, D, etc., and the grooves f, f, etc., in combination with the spokes B, B and B', B', and felly A, substantially as set forth. 3rd. In a metal wheel for vehicles and other uses, the combination of the box C, sand-band e, flange and arms D, D, grooves f, f, nut H, flange F and arms D, D, and grooves f, f, sleeve E and grooves f, f, and spokes B, B and B', B', and felly A, all substantially as and for the purpose specified.

No. 28,975. Armature for an Electric Machine. (Armature de machine électrique.)

The Ball Electric Company, (assignees of William A. Johnson), Toronto, Ont., 19th April, 1888; 5 years.

Claim.—The combination, with the wires forming the armature of an electric machine, of one or more pieces of material of low conductivity inserted in the section or sections of the armature, substantially as and for the purpose specified.

No. 28,976. Apparatus for Checking the Receipt of Money. (Appareil pour contrôler les recettes de monnaie.)

George H. Gledhill, Halifax, Eng., 19th April, 1888; 5 years.

Claim.—1st. In a money checking machine, the means substantially as herein shown and described, whereby the sliding movement of the drawer or "tilt" causes the movement of the paper after the amount of a sale has been written thereon. 2nd. In a money checking machine, the employment of an endless travelling belt, such as F, operated by the sliding movement of the drawer or "tilt" for the purpose of carrying the money away after it has been deposited thereon. 3rd. In a money checking machine, the employment of a vibrating or swinging bar, such as r, for the purpose of preventing coins being tampered with after the first movement of the endless belt, substantially as described.

No. 28,977. Method of Burning Clay to make Ballast and Paving Material. (Mode de cuire l'argile pour faire du matériel de ballast et de pavage.)

The W. Davy Company, Chicago, Ill., (assignees of William Davy, Kosonsha, Wis.), U.S., 19th April, 1888; 5 years.

Claim.—1st. The method of burning clay to produce the material herein described, which consists in making a long fire in the open air, covering the fire so formed with clay, slacking the latter and repeating the operation of covering with clay and slacking at required intervals, and produce and maintain a long fire sloping laterally, substantially as described. 2nd. The method of burning clay to produce the material herein described, which consists in laying fuel for a fire in the open air, covering the same with clay and slacking the covering, leaving openings at intervals, introducing suitable inflammable oil into the openings, lighting the fire at the openings, and slacking and covering with clay, and drawing or raking the fire at required intervals of time, to produce and maintain a laterally sloping fire, substantially as described. 3rd. The method of burning clay to produce the material herein described, which consists in making a fire in the open air, forming a trench adjacent to the fire, covering the fire with clay from the trench, slacking the covering of clay and drawing or raking the fire at required intervals of time, to produce and maintain a laterally sloping fire, then forming a shoulder lengthwise near the edge of the top of the pile with an additional layer of the slacking interval and clay, and precipitating the material forming the burning shoulder down upon a sloping side of the pile preparatory to further slacking and covering with clay, substantially as described. 4th. The method of burning clay to produce the material herein described, which consists in making a fire in the open air, forming a trench adjacent to the fire, covering the fire with clay from the trench, slacking the covering of clay and drawing or raking the fire at required intervals of time, to produce and maintain a fire sloping toward the trench and undermining the fire at the trench, to precipitate it into the same preparatory to further slacking and covering with clay, substantially as described. 5th. The method of burning clay to produce the material herein described, which consists in making a fire in the open air, covering the fire so formed with clay, slacking the covering of clay and drawing or raking the fire at required intervals of time, to produce and maintain a laterally sloping fire, then forming a shoulder lengthwise near the edge of the top of the pile with an additional layer of the slacking interval and clay, and precipitating the material forming the burning shoulder down upon a sloping side of the pile preparatory to further slacking and covering with clay, substantially as described. 6th. The method of burning clay to produce the material herein described, which consists in making a fire in the open air, forming a trench adjacent to the fire,

covering the fire with clay from the trench, slackening the covering of clay and draining or raking the fire at required intervals of time, to produce and maintain a fire sloping toward the trench, undermining the fire at the trench to precipitate it into the pit, forming a shoulder lengthwise near the edge of the top of the pit with an additional layer of the slackening material and clay, and precipitating the material forming the burning shoulder down upon the sloping side of the pit into the trench preparatory to further slackening and covering with clay, substantially as described.

No. 28,978. Belt Holder and Shifter.

(*Embryage de courroie.*)

Unico H. W. Schenck, Brooklyn, and Charles D Willis, New York, N. Y., U. S., 19th April, 1888, 5 years.

Claim.—1st. In a belt holder and shifter, a sustaining frame, a series of belt supports arranged in a segmental line thereon in close proximity to an associated pulley, in combination with a series of movable arms mounted on the frame, within the segmental line in which the supports are arranged and connected with a suitable operating lever, and having rollers on their outer ends capable of rotation toward the pulley and adapted to engage with the under side of a belt on the supports, lift the same and shift it onto the pulley when the outer ends of the arms are moved beyond said supports, all constructed, arranged and operating substantially as shown and described. 2nd. In a belt holder and shifter, a sustaining frame, a series of belt supports arranged in a segmental line thereon in close proximity to an associated pulley, in combination with a series of movable arms mounted on the frame, within the segmental line in which the supports are arranged and connected with a suitable operating lever and having rollers on their outer ends capable of rotation toward the pulley, and so arranged that, when the outer ends of the arms are moved beyond the supports, the rollers will engage with the under side of the belt on the same at points beyond its running centre line away from the pulley, all constructed, arranged and operating substantially as shown and described. 3rd. In a belt holder and shifter, the combination of a suitable sustaining plate, a series of laterally projecting belt supports mounted on bolts secured to said plate and arranged in a segmental line thereon in close proximity to an associated pulley, said belt supports having shifting arms projecting at an angle therefrom and provided with rollers on their outer ends, and lever arms connected with a suitable operating lever, all constructed, arranged and operating substantially as shown and described, whereby, when the belt supports are turned, the rollers on the shifting arms will engage with the under side of the belt on said supports, lift the same and shift it onto the pulley. 4th. In a belt holder and shifter, the combination of a bracket secured to a suitable support, an adjustable sustaining plate secured thereto, a series of belt supports arranged in a segmental line thereon in close proximity to an associated pulley, a series of movable arms mounted on the frame within the segmental line in which the supports are arranged, and connected with a suitable operating lever, and having rollers on their outer ends capable of rotation toward the pulley, and adapted to engage with the under side of the belt, lift the same and shift it onto the pulley when the outer ends of the arms are moved beyond said supports, all constructed, arranged and operating substantially as shown and described. 5th. In a belt holder and shifter, the combination of the supporting plate B, belt supports *b*, *b*¹, *b*², *b*³, arranged in a segmental line thereon and having lever arms *F*, connected with a suitable operating lever, and projecting arms *F*¹, having rollers on their outer ends, said arms being so arranged that, when their outer ends are moved beyond the supports, the rollers will engage with the under side of the belt at points beyond its running centre line away from the pulley, all constructed, arranged and operating substantially as shown and described. 6th. In a belt holder and shifter, the combination, with a bracket secured to a suitable support and an associated pulley, of a sustaining plate secured to said bracket and adjustable in the arc of a circle concentric with the associated pulley, and having a series of belt supports arranged in a segmental line thereon, all constructed and arranged substantially as shown and described, as and for the purpose set forth. 7th. In a belt holder and shifter, the combination with the bracket A and associated pulley B, of the sustaining plate C secured to said bracket and adjustable in the arc of a circle concentric with the associated pulley, and having a series of belt supports *H* arranged in a segmental line thereon, all constructed and arranged substantially as shown and described, as and for the purpose set forth. 8th. In a belt holder and shifter, a suitable belt holder arranged in close proximity to an associated pulley and belt, a sheave mounted on said frame and connected with a suitable operating lever in combination with a sliding bar mounted in bearings near the belt, and having a shifter arm adapted to engage with the belt on its side away from the belt holder, a rope or chain secured at one end to the sheave, and at the other to the sliding bar, all constructed and arranged substantially as shown and described, whereby, when the sheave is turned, the rope or chain will be wound around the same and draw the shifter arm toward the holder, and cause it to engage with the belt and shift it onto said holder. 9th. In a belt holder and shifter, the combination of the sustaining plate B having belt supports *b*, *b*¹, *b*², *b*³, arranged in close proximity to an associated pulley, the sheave *V* mounted on said plate and connected with a suitable operating lever, the sliding bar *M* mounted in bearings and having the arm *N*, and the rope or chain *P* connecting the sliding bar and sheave, all constructed, arranged and operating substantially as shown and described.

No. 28,979. Manufacture of Telegraph Poles and Arms, or Insulator Bars for Telegraph Poles and Telegraph Insulators. (*Fabrication des poteaux et des triangles d'isolateurs de télégraphie.*)

David Wilson, Grays, Eng., 20th April, 1888, 5 years.

Claim.—1st. The use of wire netting and concrete, or wire netting and cement, as the sole or essential materials in the manufacture of telegraph poles. 2nd. The manufacture of telegraph poles by form-

ing a tubular core of wire netting, or a skeleton metal frame of the general figure of the pole required, and coating the said core or frame on both sides with cement or with a concrete or composition of the kind hereinafter described. 3rd. The use, in the manufacture of telegraph poles, of a core formed entirely of wire netting bent into the required form, whether or not the core be bound or confined by the means hereinafter described, or other means to be used for preventing the core from springing open while it is being handled, or while the said manufacture is being completed. 4th. The use, in the manufacture of telegraph poles, of a core of wire netting strengthened by means of metal rods secured thereto, as illustrated in Figs. 21 and 22 of the accompanying drawings. 5th. The use, in the manufacture of telegraph poles, of a core of metal bars or rods and hoops, constructed substantially as hereinafter described, and illustrated in Figs. 23 and 24 of the accompanying drawings. 6th. Strengthening tubular telegraph poles by securing wooden poles, or posts, or blocks of wood within them either after or during their manufacture. 7th. Forming telegraph poles of two or more lengths of tubes of concrete and metal, or of cement and metal, as hereinafter described, the several lengths being connected together end to end by securing them to wooden poles or posts inserted in the hollows of the said tubes. 8th. Forming cross arms for telegraph insulators of metal and cement or concrete, substantially as hereinafter described. 9th. Forming telegraph insulators of cement.

No. 28,980. Manufacture of Columns, Pillars, Flag Staffs, Signal Posts for Railways, Lamp Posts and other Posts, Rolls or Rollers, Chimneys, Pipes for Conveying Liquids or Gases, and other Tubular Articles, Railway and Tramway Sleepers, Door Steps, Lintels, Window Sills, Building Blocks and Tanks, Casks and Drums for Containing Liquid, Semi-Liquid and Solid Matters. (*Fabrication des colonnes, piliers, mâts de pavillons, poteaux de signaux, pour chemins de fer, poteaux de réverbères et autres, rouleaux, cheminées, tuyaux d'eau et de gaz, et autres tubes, traverses de chemins de fer et de tramways, seuils de portes, linteaux, allèges de fenêtres, blocs de construction, et des réservoirs, fûts et cuves pour les corps liquides, semi-liquides et solides.*)

David Wilson, Grays, Eng., 20th April, 1888, 5 years.

Claim.—1st. The use of wire netting and concrete or cement as the sole or essential materials, in the manufacture of columns, pillars, flag staffs, signal posts for railways, lamp posts, fence posts, and other posts, rolls or rollers for various purposes, chimneys, pipes for conveying liquids or gases, and other like tubular articles, railway and tramway sleepers, door steps, lintels, window sills, building blocks, and tanks, casks and drums for containing liquids, semi-liquid and solid matters. 2nd. The manufacture of such articles by forming a core of wire netting or a skeleton metal frame of the general figure of the article required, and coating the said core or frame on both sides with a concrete or composition of the kind hereinafter described. 3rd. The use, in the manufacture of such articles, of a core formed entirely of wire netting bent into the required form. 4th. The use, in the manufacture of such articles, of a core of wire netting strengthened by means of metal rods secured thereto. 5th. The use, in the manufacture of such articles, of a core of metal bars or rods and hoops. 6th. Strengthening tubular flag staffs and other tubular articles made as hereinafter described, and which are not required to be hollow by securing wooden poles or posts, or blocks of wood within them, either after or during their manufacture. 7th. Forming flag staffs and posts of two or more lengths of tubes of concrete and metal, or cement and metal, as hereinafter described, the several lengths being connected together end to end by securing them to wooden poles or posts inserted in the hollows of the said tubes.

No. 28,981. Steam Injector. (*Injecteur de vapeur.*)

Louis Schutte, Philadelphia, Pa., U. S., 20th April, 1888, 5 years.

Claim.—1st. In a duplex injector in which the fluids discharged from the first nozzle are returned and delivered to the second nozzle, the body diminishing in size toward the delivery end, in combination with the two nozzles arranged therein side by side in lines converging toward the delivery end, whereby the velocity of the fluids discharged from the first nozzle is maintained during their passage therefrom to the second nozzle. 2nd. In a duplex injector, the converging nozzles arranged side by side in lines converging toward the delivery end, in combination with the enclosing body reduced in size externally toward its delivery end, and provided with the passage for returning the fluids from the delivery end of one nozzle to the receiving end of the other. 3rd. In an injector, the lever *B* controlling the steam admission, in combination with the eccentrics thereon, the connecting bar *p*, the lever *o*, the link *u* and overflow valve *l*. 4th. In a duplex injector having substantially horizontal nozzles and the enclosing body, the vertically reciprocating starting valve *l*.

No. 28,982. Steam Injector. (*Injecteur de vapeur.*)

Louis Schutte, Philadelphia, Penn., U. S., 20th April, 1888, 5 years.

Claim.—1st. In an injector having a steam nozzle, a mixing tube and a discharge tube, an external body enclosing and sustaining said parts, said body provided at its discharge end with duplicate threaded delivery openings at right angles to each other and with a plug

changeable from one to the other of said opening at will. 2nd. In an injector containing a steam nozzle, a mixing tube and a discharge tube, an internal body inclosing and sustaining said parts, said body provided at its end with duplicate openings at right angles to each other, and with a plug changeable from one to the other of said openings at will. 3rd. In an injector or jet apparatus having a combining and a discharge tube, a reversible spindle having its two ends of different sizes. 4th. The spindle having the central collar and the screw threads, in combination with a plug or support adapted to permit the reversing of the spindle therein.

No. 28,983. Fire-Escape. (*Sauveteur d'incendie.*)

Thomas M. Browder, Greenfield, Ohio, U.S., 20th April, 1888; 5 years.

Claim.—1st. The combination, with the frame and the blanket, of the hangers loosely connected with said frame at their upper ends, and having their lower ends free, and adapted to swing toward the centre of the frame, and means for yieldingly connecting the blanket with said hangers, whereby, when a weight is superimposed upon the blanket, its connections with the hangers will yield and the lower ends of the hangers will approach or swing inward, substantially as and for the purpose specified. 2nd. The combination, with the frame and the blanket, of the hangers loosely connected at their upper ends with the frame, and having their lower ends free to swing inward, the cross-heads connected with the blanket and mounted on the hangers, and the springs held to the hangers and supporting the cross-heads, substantially as specified and for the purpose described. 3rd. The combination, with the frame and the blanket, of the hangers, the cross-head, the springs and the nuts for adjusting the tension of the springs, substantially as specified. 4th. The combination, with the frame made in sections, and the couplings for securing the sections together, having one end secured to the end of one of the sections, and the free ends slipped over the ends of the other sections, of the blanket, and the yielding connections uniting the blanket and frame, substantially as set forth. 5th. The combination, with the frame made in sections, the couplings secured at one end to one of the sections, and having its other end slipped over the approximate end of the other section, and the keys passed through the couplings and the end of the sections loosely fitted in the couplings, of the blanket and the yielding connections uniting the blanket and frame, substantially as set forth. 6th. The combination of the circular frame and the circular blanket, and the yielding connections interposed between and uniting the frame and the blanket, whereby the strain is equally distributed on all parts of the blanket and frame, and the yielding connections are subjected to an equal tension and are free to adapt themselves to the direction of strain, substantially as described. 7th. The combination, with the circular frame made in sections and having the approximate ends of the sections connected by the separable couplings and the circular blanket, of the hangers loosely connected at their upper ends with the frame, and having their lower ends free to swing inward, the cross-heads connected with the blanket and mounted on said hangers, and the springs for supporting the cross-heads, substantially as described for the purpose specified.

No. 28,984. Reed Organ. (*Orgue.*)

Bell & Co., (assignees of John H. Kydd), Gaelph, Ont., 20th April, 1888; 5 years.

Claim.—1st. An organ action in which the pivoted keys extend over the reed cells, and have valves formed on them to act directly upon the said cells, substantially as and for the purpose specified. 2nd. An organ action in which the pivoted keys extend over the reed-cells, and have valves formed on them to act directly upon the said cells, in combination with a vertical cell-board forming the centre-board of the bellows, substantially as and for the purpose specified. 3rd. The pivoted keys A, extending over the reed-cells B and having reed-valves C formed on them, in combination with the vertical reed-cells B and spring D, arranged substantially as and for the purpose specified.

No. 28,985. Car Starter.

(*Appareil de mise en mouvement des chars.*)

Downs L. Brown and Edward F. Hartmann, Franklin, Mass., U.S., 20th April, 1888; 5 years.

Claim.—1st. In a car starting mechanism, the combination, with a rotary axle provided with a toothed wheel affixed thereon, of an oscillating pawl adapted to reciprocate upon two pins transversely located within a hanger, substantially as described. 2nd. In combination with the chambered hanger and its pins, the oscillating loosely mounted pawl which reciprocates upon said pins, its catch *a* and the rotary toothed wheel, all operating as herein set forth. 3rd. The rotary shaft B, toothed wheel C and chambered hanger E, with its pins *c, g*, in combination with the operating rod *e* and oscillating pawl *h*, conveyed at *a*, and with the slot *f*, and catch *a*, substantially as described. 4th. The combination, with the rotary toothed wheel D, hanger E, and pins *c, g*, of the oscillating pawl *h*, with its tool *b* adapted to contact with the hanger at *a*, to tilt the pawl, for purposes herein stated.

No. 28,986. Running Gear for Vehicles.

(*Tran de voiture.*)

Warnock & Co., (assignees of William E. Rothwell), Galt, Ont., 20th April, 1888; 5 years.

Claim.—The combination of one or two springs rigidly fastened to a head-block, one eye-end being pivoted on a stud projecting from the front side of the axle, while the other eye-end is pivoted on a stud projecting from the rear, or opposite side of the axle, so that the centre line between the two ends shall be immediately over the centre line of the axle they are connected to, substantially as and for the purpose specified.

No. 28,987. Block Printing Machine.

(*Machine d'impression à la main.*)

Thomas Potter, Jr., William Potter, Henry A. Potter, Charles A. Potter and James F. Hono, (assignees of Nelson L. Tuck), Philadelphia, Penn., U.S., 20th April, 1888; 5 years.

Claim.—1st. In an oil-cloth printing machine, the following elements in combination, first, a bed upon which the fabric to be printed is laid and along which it is caused to travel, second, an intermittently operating fabric feed which acts upon the fabric to occasion its intermittent predetermined advance, third, a series of reciprocating reversing printing block carriers which alternately simultaneously descend upon the fabric to print it and simultaneously ascend against color feeds, and fourth, a series of color feeds which supply color to the printing faces of the block carriers, substantially as set forth. 2nd. In an oil-cloth printing machine, the following elements in combination, first, a bed upon which the fabric to be printed is laid and along which it is caused to travel, second, an intermittently operating fabric feed which acts upon the fabric to occasion its intermittent predetermined advance, third, fabric feed operating devices which occasion the advance and retreat of the fabric feed, fourth, a series of reciprocating reversing printing block carriers which alternately simultaneously descend upon the fabric to print it and simultaneously ascend against the color feeds, fifth, block carrier actuating devices which alternately occasion the simultaneous descent and the simultaneous ascent of the block carriers, and sixth, a series of color feeds which supply color to the printing faces of the block carriers, substantially as set forth. 3rd. In an oil-cloth printing machine, the following elements in combination, first, a bed upon which the fabric to be printed is laid and along which it is caused to travel, second, an intermittently operating fabric feed which acts upon both edges of the fabric to occasion its intermittent advance, and which is composed of two pairs of connected parallel feed bars, third, a series of reciprocating reversing printing block carriers which alternately simultaneously descend upon the fabric to print it, and simultaneously ascend against color feeds, and fourth, a series of color feeds which supply color to the printing faces of the block carriers, substantially as set forth. 4th. In an oil-cloth printing machine, the following elements in combination, first, a bed upon which the fabric to be printed is laid and along which it is caused to travel, second, an intermittently operating fabric feed which acts upon the fabric to occasion its intermittent predetermined advance, third, a series of reciprocating reversing printing block carriers which alternately simultaneously descend upon the fabric to print it, and simultaneously ascend against color feeds, fourth, a series of color feeds which supply color to the printing faces of the block carriers, and are each composed essentially of an endless apron operating in connection with a color trough, substantially as set forth. 5th. In an oil-cloth printing machine, the following elements in combination, first, a bed upon which the fabric to be printed is laid and along which it is caused to travel, second, an intermittently operating fabric feed which acts upon both edges of the fabric to occasion its intermittent advance, and which is composed of two pairs of connected parallel feed bars, third, fabric feed operating devices which occasion the advance and retreat of the fabric feed, fourth, a series of reciprocating reversing printing block carriers which alternately simultaneously descend upon the fabric to print it, and simultaneously ascend against color feeds, fifth, block carrier actuating devices which alternately occasion the simultaneous descent and the simultaneous ascent of the block carriers, and sixth, a series of color feeds which supply color to the printing faces of the block carriers and are each composed essentially of an endless apron operating in connection with a color trough, substantially as set forth. 6th. In an oil-cloth printing machine, the following elements in combination, first, a bed upon which the fabric to be printed is laid and along which it is caused to travel, second, an intermittently operating fabric feed which acts upon both edges of the fabric to occasion its intermittent advance, and which is composed of two pairs of connected parallel feed bars, third, fabric feed operating devices which occasion the advance and retreat of the fabric feed, fourth, a series of reciprocating reversing printing block carriers which alternately simultaneously descend upon the fabric to print it, and simultaneously ascend against color feeds, fifth, block carrier actuating devices which alternately occasion the simultaneous descent and the simultaneous ascent of the block carriers, sixth, color feeds which supply color to the printing faces of the block carriers and are each composed essentially of an endless apron operating in connection with a color trough, and seventh, apron operating devices which occasion the intermittent advance of the apron with respect to the color trough, substantially as set forth. 8th. In an oil-cloth printing machine, the fabric elements in combination, first, a bed upon which the fabric to be printed is laid and along which it is caused to travel, second, an intermittently operating fabric feed which acts upon both edges of the fabric to occasion its intermittent advance and which is composed of two pairs of connected parallel feed bars, third, oscillatory levers which occasion the advance and retreat of the feed bars, fourth, a series of reciprocating reversing printing block carriers which alternately simultaneously descend upon the fabric to print it, and simultaneously ascend against color feeds, fifth, cranks and pitmans which occasion the alternate ascent and descent of the block carriers, sixth, a series of color feeds which supply color to the printing faces of the block carriers and are each composed essentially of an endless apron operating in connection with a color trough, seventh, apron operating devices which occasion the intermittent

advance of the apron with respect to the color trough, and eight, means essentially, for instance such as set forth, for occasioning the concomitant action of the feed levers, the carrier cranks and pumps and the apron operating devices, substantially as set forth. 9th. In an oil cloth printing machine, the following elements in combination, first, a bed upon which the fabric to be printed is laid and along which it is caused to travel, second, an intermittently operating fabric feed which acts upon the fabric to occasion its intermittent predetermined advance, third, a series of reciprocating reversing printing block carriers which alternately simultaneously descend upon the fabric to print it, and simultaneously ascend against color feeds, fourth, a series of color feeds which supply color to the printing faces of the block carriers, and fifth, a tension roller, substantially as and for the purposes set forth. 10th. In an oil-cloth printing machine, the following elements in combination, first, a bed upon which the fabric to be printed is laid and along which it is caused to travel, second, an intermittently operating fabric feed which acts upon the fabric to occasion its intermittent predetermined advance, third, a series of reciprocating reversing printing block carriers which alternately simultaneously descend upon the fabric to print it, and simultaneously ascend against color feeds, fourth, color feeds which supply color to the printing faces of the block carriers, and fifth, arresting devices essentially such as the toe cams to prevent the accidental retreat of the fabric after its advance, substantially as set forth. 11th. A fabric feed device for an oil-cloth printing machine which acts upon the edges of the fabric to be printed, and is composed essentially of two pairs of link connected parallel bars, substantially as set forth. 12th. In an oil-cloth printing machine, the following elements in combination, first, a bed upon which the fabric to be printed is laid and along which it is caused to travel, second, ways formed in, or applied to said bed, third, two pairs of link connected parallel bars, one of the bars of each of which pairs is adapted to travel in the aforesaid ways, fourth, means essentially such as the feed levers which occasion the intermittent reciprocation of the feed bars, and fifth, means essentially such as the feed cam for occasioning the operation of the feed levers, substantially as set forth. 13a. In combination with the feed bars, the lever housings provided each with a reversing face, a draft face and an idle face, the oscillatory feed levers, and means essentially such as set forth, for operating said levers, substantially as set forth. 14th. A color supplying device or color feed for the printing block of an oil cloth printing machine, which is composed essentially of an endless travelling apron with reference to which is mounted or superimposed a color trough with respect to which it, the said apron travels, substantially as set forth. 15th. A color supplying device or color feed for the printing block of an oil-cloth printing machine, which is composed essentially of an endless travelling apron with reference to which is mounted or superimposed a color trough with respect to which it, the said apron travels, and which is also provided with a cushioned elastic or resilient surface with respect to which it also travels, substantially as set forth. 16th. A color supplying device or color feed for the printing block of an oil-cloth printing machine, which is composed essentially of an endless travelling apron with reference to which is mounted or superimposed a color trough with respect to which it, the said apron, substantially as set forth. 17th. A color supplying device or color feed for the printing block of an oil-cloth printing machine, which is composed essentially of an endless travelling apron with reference to which is mounted or superimposed a color trough with respect to which it, the said apron travels, which is also provided with a cushioned elastic or resilient surface with respect to which it also travels, and which is also provided with a doctor to remove surplus color from it, the said apron, substantially as set forth. 18th. A color supplying device or color feed for the printing block of an oil-cloth printing machine, which is composed essentially of an endless travelling apron which as to its active face travels over a cushioned elastic or resilient surface, and which as to its passive surface travels through a color trough provided with a doctor to remove surplus color from it, the said apron, in combination with means, essentially such as set forth, which occasion the intermittent travel of the apron with respect to the trough, with a reciprocating reversing printing block carrier with a bed upon which the fabric to be printed is laid and along which it is caused to travel, and with an intermittently operating fabric feed which acts upon the fabric to occasion its intermittent predetermined advance upon said bed, substantially as set forth. 19th. The combination to form a color supplying device or color feed, of an endless travelling apron, a pair of rollers over which said apron travels, adjustable boxings with respect to which the rollers are journaled, a cushion pad or other elastic or resilient surface over which the active face of the apron travels, a frame work for supporting said pad and the adjustable boxes of the rollers, a trough combined with said frame-work through which the passive surface of the apron travels, and the floor of which trough is composed of said passive surface of said apron, and an adjustable doctor which serves to remove surplus color from the apron after its passage through said trough, substantially as set forth.

No. 28,988. Whale-Bone substitute from Raw Hides. (*Article de peau verte comme substitut pour la baleve*)

Ernest F. Grether and Charles Mosher, South Bend, Ind., U. S., 23rd April, 1888; 10 years.

Claim.—1st. In a process for making whale-bone substitute from rawhide, the herein described method of hardening the gelatine, the same consisting in the treatment of the cleaned hide in a bath of soluble silicate of soda, substantially as described. 2nd. In a process for making whale-bone substitute from raw hide, the method herein described of disinfecting the hide, the same consisting in treating the cleaned hide in a bath of dilute carbolic acid or bromo-chloralum substantially as described. 3rd. The process herein described for

disinfecting and hardening raw hide, the same consisting in treating the clean hide to a bath of dilute carbolic acid or bromo-chloralum, and then, when dry or nearly so, treating it in a bath of soluble silicate of soda, substantially as described. 4th. The process herein described for making whale-bone substitute from raw hide, the same consisting in, first cleaning the hide, then treating it in a bath of dilute carbolic acid or bromo-chloralum, then after suitable drying, treating it in a bath of soluble silicate of soda, and then, when sufficiently dry, condensing it, substantially as described. 5th. The process herein described for treating raw hide to render it hard, elastic and water-proof, which process consists in washing the hide, treating it with lime, at a temperature not above 90° Fahrenheit, to remove the hair, stretching and nearly drying it, immersing it in a bath of dilute carbolic acid or bromo-chloralum, for disinfecting purposes, passing it between rollers under pressure, and again stretching and nearly drying it, immersing it in a bath of the soluble silicate of soda until it is saturated therewith, then partly drying it and subjecting it again to roller pressure to solidify it, then completing the drying of it at a temperature not over 112° Fahrenheit, then varnishing it and passing it again between the rollers until it is reduced to a uniform thickness, substantially as described. 6th. The process herein described for treating raw hides to render them hard, elastic and water-proof, which process consists in subjecting a hide after partial drying to a bath of dilute disinfectant, such as bromo-chloralum or carbolic acid, passing it between rollers to facilitate drying, and stretching and nearly drying it, immersing it in a bath of a soluble silicate—such as silicate of soda—until saturated therewith, then partly drying it, then varnishing it, subjecting it to a pressure to solidify, then completely drying it at a temperature not to exceed 112° Fahrenheit, and passing through rollers to render it uniform in thickness, then varnishing it to give it color and a finished appearance. 7th. As a new article of manufacture, cleaned and hardened raw hide with the gelatine therein rendered hard and insoluble, substantially as described.

No. 28,989. Thill Coupling. (*Armon de limonière.*)

Walter T. Ross, Quebec, Que., 23rd April, 1888; 5 years.

Claim.—1st. A thill-coupling, comprising two coupling jaws D, D', hinged together at one end, and opening apart at the other end, a plate E and clip B, to secure the coupling to an axle, and a bolt G and nut H, to close the jaws, as set forth. 2nd. The combination of the clip B, hinged coupling jaws D, D', plate E, thill-iron C, coupling-bolt G and nut H, as and for the purpose set forth.

No. 28,990. Covering for Rollers, etc. (*Couverture pour rouleaux, etc.*)

Charles Holstead, Providence, R. I., U. S., 23rd April, 1888; 5 years.

Claim.—1st. "The process which consists in, first removing the impurities from the raw hide in a solution of sal-soda and water, second submitting it to a bath of pure hot water, third filtering and evaporating the liquid, and fourth casting the semi-fluid about the surface of the roller or articles to be covered, substantially as and for the purpose described. 2nd. A roll or pulley having a covering consisting of raw hide which has been boiled down in water, and afterwards solidified about the rim of the roller or pulley. 3rd. In combination of a roller or pulley, an annulus of elastic material upon the rim thereof, and a covering consisting of raw hide which has been boiled down in water, and afterwards solidified around the annulus of elastic material.

No. 28,991. Watch-Case. (*Boite de montre.*)

Robert J. Quigley, Toronto, Ont., 23rd April, 1888; 5 years.

Claim.—1st. A watch-case having a thread cut on the interior circumference of its centre, which is made sufficiently wide to receive the movement ring, and screwed projections a formed on the back C and bezel D, substantially as and for the purpose specified. 2nd. A watch-case having a thread cut in the interior circumference of its centre, which is made sufficiently wide to receive the movement ring, and screwed projections a formed on the back C and bezel D, in combination with divided or double movement ring B, substantially as and for the purpose specified.

No. 28,992. Process of Producing and Supplying Food for Fish and Apparatus therefor. (*Procédé et appareil de production et de distribution de la nourriture du poisson.*)

François Lugrin and Edouard Du Rovoray, Geneva, Switzerland, 23rd April, 1888; 5 years.

Claim.—1st. The industrial and practical method or process for feeding and breeding fish, whereby water charged with the excrement of fish or other suitable excrementitious matter is utilised for the production, reproduction and feeding of annulidæ which shall serve as food for the fry and fish in its turn, substantially as specified. 2nd. The employment of water snails, crustaceous naas and insect larvae having for our object the clearing of the water from germs and aquatic vegetation hurtful to the reproduction and development of the annulidæ which constitute the food of the fish. 3rd. The collection of the excrements from the bottom of the pools (or ponds) and, by the application of heat to it, quickening the process of reproduction of insect food for fish. 4th. The combination of two or more pools for ponds, permitting of the alternate transfer of the fish from one to the other according to the different phases of the process, substantially as shown and for the purposes described. 5th. The combination of a system of pools (or ponds) divided in double series of small pools E and communication with one another, and provided with sluices or doors c, for the passage of the fish, to allow their being assorted according to their size, and also to allow the fish to be transferred from one half series to the other, substantially as and for the purposes specified. 6th. The combination, with either the pair of pools A, B, (or ponds) or the series E, of one or more reserve

pools C, for commencing the process and providing a relay of food when required, substantially as shown and described. 7th. The combination, with our system, of overflow canals to carry off the wastewater.

No. 28,993. Fire-Escape. (*Sauveteur d'incendie.*)

John Matthie, Lindsay, Ont., 24th April, 1888; 5 years.

Claim.—1st. In a fire-escape, the combination, with the drum E and cable F, of the friction rollers G, H and the supporting frame, substantially as specified. 2nd. The combination, with the cable F, the drum E and its supporting frame, of the permanent brake formed of the yoke I, the pin b and bolt C, substantially as specified. 3rd. In a fire-escape, the combination of the frame formed of the side pieces A, A', the cross piece B, the drum E, cable F, the rollers G, H, journaled in the supporting frame, and the curved lever J adapted to engage the flange of the drum E, substantially as specified. 4th. In a fire-escape, the combination of the frame formed of the side pieces A, A' and cross piece B, with the drum E, the cable F, the rollers G, H, the bolt C, the yoke I, pin b and the curved brake lever J, substantially as specified.

No. 28,994. Washing Machine.

(*Machine à blanchir.*)

Henry Hassenpflug, Huntingdon, Penn., U. S., 24th April, 1888; 5 years.

Claim.—1st. The combination of the tin lining c and tin head a, having lapped edge m, with the tin ring i having bead j, and with the outer iron shell f and heads h, substantially as described. 2nd. The cover of the washing cylinder, the same being constructed of a wooden portion D having slope s, in combination with the lower and outer metal lining p, doubled and upwardly projecting inner lining q, rubber ring t and upper metal lining u, substantially as described. 3rd. The combination of the inner washing cylinder of corrugated inner lining e and inner head linings p, with the iron outer lining f and iron heads h, and with the cover consisting of the wooden portion D having slope s, lower and outer lining p, inner lining q, rubber ring t and upper lining u, all constructed substantially as herein shown and described. 4th. The combination of the lid E, having downwardly projecting flange z, with the cover having slope s, rubber ring t on said slope, inner doubled upwardly projecting lining q and outer metal lining u, as specified. 5th. The combination of the removable lid E of a washing machine, with the immovable cover of said machine and with the slotted sliding bolts F, F', screws p, nuts z and stationary hasps a', substantially as herein shown and described. 6th. The rod G combined with the washing cylinder C, within which it is rigidly held, said rod having the alternating projections c' and depressions d', the projections constituting part of the body of the rod, as specified. 7th. The combination of the corrugated rod G with the metal ferrules b', and metal cylinder ends p, p', to which said ferrules are connected by solder, as specified.

No. 28,995. Brush with Removable Cover.

(*Brosse à couvercle mobile.*)

Frederick W. King, Hamilton, Ont., 24th April, 1888; 5 years.

Claim.—1st. The combination of a frame A, having bell mouthed perforations c, each provided with brush B, of which the sides of the upper curves are encased in the longitudinal slots a, substantially as and for the purpose hereinbefore set forth. 2nd. The combination, in a brush, of the frame A, with perforations c and the removable cover E, substantially as and for the purpose hereinbefore set forth. 3rd. The combination, with the frame A, its end plates D and G, cover screw fastener H, with nut I, of the removable cover F with its plate E, substantially as and for the purpose hereinbefore set forth.

No. 28,996. Chemical Fire-Extinguisher.

(*Extincteur chimique d'incendie.*)

Edward J. Ennis, Montreal, Que., 24th April, 1888; 5 years.

Claim.—1st. In combination with the shell of a chemical fire-extinguisher, the combination of the threaded rim B, screwed stopper C, top plate D with annular groove D', washer d, block H, tube E, bottle stopper F and handle G, all as herein described and for the purposes set forth.

No. 28,997. Washing Machine.

(*Machine à blanchir.*)

Félix Archambault and Albert Tremblay, Montreal, Que., 24th April, 1888; 5 years.

Résumé.—1st. Une machine à laver formée des côtés demi-cercles B, B', ou quelque chose d'équivalent, et de la sonnerie C, D, E, E', montée sur des pieds H, H', H'', et munie du cylindre à laver cannelé L, et de la lavouse aussi cannelée S, en combinaison avec la manivelle M, les ressorts O, O' et le couvercle F, G, le tout tel que ci-dessus décrit et pour les fins sus-mentionnées.

No. 28,998. District Electric Call System.

(*Système de téléphone électrique.*)

James A. Wright, Montreal, Que., 24th April, 1888; 5 years.

Claim.—1st. A district telephone system consisting of subscribers instruments A₁, A₂, A₃, connected together by the main circuit 2, each instrument having two paths for the electric current, one of which is to the ground in speaking and the other through the instrument when not speaking, and contact spring A to signal before speaking, and an electric circuit continued by the wires 11, 12, from a telephone instrument in the district office in opposite directions to the main line, said instrument having a wire 10 to battery D₂, and ground wire 9, and relay R, annunciator R₁ and bell R₂, in electrical connection with the main line and batteries D, D₁, as set forth. 2nd. A telephone instrument having spring A, switch hook a, spring a', receiver T, induction

coil B, ele trodes c, c', in electrical connections, as set forth, and with a ground wire 10, whereby the electric current will have two paths through the instrument, for the purposes described. 3rd. A telephone system consisting of a series of subscribers' boxes connected by the main line, and each provided with a ground wire in electrical connection with a box or instrument in the district office, said box having a ground wire in electrical connection with a relay R₁, vibrating bell R₂, in circuit and vitalized by batteries D, D₁, D₂, respectively, as set forth.

No. 28,999. Wash-Board. (*Planche à savonner.*)

George B. Dowswell, Hamilton, Ont., 24th April, 1888; 5 years.

Claim.—In a wash-board, the curved zinc face or rubbing surface D, the corrugations in the same being formed in square decks depressed or sunk, each having an aperture or hole E in the centre or bottom of it, as and for the purposes herein set forth and described.

No. 29,000. Digester for Wood Pulp.

(*Pourisseur de pâte de bois.*)

Cyrus F. Logan, Ticonderoga, N.Y., U.S., 24th April, 1888; 5 years.

Claim.—1st. The combination, with the tank or chamber having the perforated partition, of the pipe E supported therein, a spraying device supported above said pipe and provided with the horizontal jet passages, and a steam pipe entering said pipe E to create a vacuum therein, substantially as set forth. 2nd. The combination, with the tank or chamber having the perforated partition, of the pipe E supported therein, a steam pipe communicating therewith to create a vacuum therein, and a horizontal pipe communicating with the space below the partition and covered at its upper end by means of a perforated cap, substantially as set forth. 3rd. In a sprinkling device for wood pulp digesters, a concave disk provided with radial horizontal jet-tubes, substantially as set forth. 4th. The combination, with the tank or chamber and horizontal partition thereof, of a casting H, located below said partition, a vertical pipe E communicating therewith and extending upwardly above said partition, a jet sprinkling device located above said pipe, a steam pipe communicating with said pipe E, and a condenser pipe communicating with said casting, as set forth.

No. 29,001. Sole Sewing Machine.

(*Machine à coudre les semelles.*)

Charles Goodyear, jr., Newton, Mass. (assignee of Christian Dancol, New York, N.Y.), U.S., 25th April, 1888; 5 years.

Claim.—1st. The combination, in a lock-stitch sewing machine, of the work-support, an oscillating barbed or hooked circularly curved needle, an oscillating discoidal shuttle arranged above the work-support, an awl, and means for giving the awl a lateral movement while in the material, whereby it operates as a feeding device, substantially as described. 2nd. The combination, in a lock-stitch sewing machine, of the work-support, an oscillating shuttle arranged above the work-support, an oscillating circularly curved awl and needle in opposite directions, and a longitudinally moving presser-foot or channel gauge operating with the awl in feeding the work, substantially as described. 3rd. In a lock-stitch sewing machine, the combination of the oscillating circularly curved hooked needle, a needle guide or support, a discoidal shuttle oscillating around its own axis in a plane at right angles, or nearly so, to the plane of the needle, and a looper, substantially as described. 4th. In a lock-stitch sewing machine, the combination of the oscillating circularly curved hooked needle, and a discoidal shuttle oscillating around its own axis, in a plane at right angles, or nearly so, to the plane of the needle, and having a hook moving in a path which does not intersect the path of the needle, substantially as described. 5th. In a lock-stitch sewing mechanism, the combination of a circularly curved needle and a circularly curved awl mounted in toothed lever segments, of larger radius than the radius of the needle and awl, with a discoidal shuttle oscillating in a plane at right angles, or nearly so, to the plane of the needle, and having a hook moving in a path which does not intersect the path of the needle, substantially as described. 6th. In a lock-stitch sewing mechanism, the combination of a circularly curved hooked needle, a discoidal shuttle operating at right angles to said needle, a hook formed on said shuttle, and a loop retractor or spreader for carrying the loop into the path of the shuttle hook, substantially as shown and described. 7th. In a lock-stitch sewing mechanism, the combination of a circularly curved hooked needle having an oscillating motion, a discoidal shuttle oscillating in a plane at right angles, or nearly so, to the plane of the needle, a loop retractor or spreader having a path intersecting the path of the needle, and means, substantially as described, for imparting to said loop retractor a reciprocating motion in a plane parallel, or nearly so, to the plane of the needle, substantially as described. 8th. In a lock-stitch sewing mechanism, the combination of a circularly curved hooked needle, a discoidal shuttle, a hook formed on said shuttle, a looper for conveying the thread to the needle, a loop spreader or retractor, and means to cause the said spreader to engage that strand of the loop which leads to the looper, and to carry it into the path of the shuttle hook, substantially as shown and described. 9th. In a lock-stitch sewing mechanism, the combination, with a work-support and with a circularly curved hooked needle having a rotary reciprocating motion, of a discoidal shuttle having an oscillating motion in a plane at right angles, or nearly so, to the plane of the needle, a hook formed on said shuttle and made to move in a path not intersecting the path of the needle, a looper beneath the work-support for conveying the thread to the needle, a loop spreader above the work-support, and means to cause the said spreader to engage that strand of the loop, which leads directly from the eye of the needle to the looper and to carry it into the path of the shuttle hook, substantially as shown and described. 10th. In a lock-stitch sewing machine, the combination of a work-support, an oscillating circularly curved hooked needle, a circularly curved awl, means for moving the awl and needle in opposite directions, an oscillating discoidal shuttle operating at right angles to the needle and arranged above the work-support, a

hook on the shuttle for taking up the lower thread, and take-up mechanism below the work-support for drawing the loop off the shuttle, substantially as described. 11th In a lock-stitch sewing machine, the combination of a work-support, an oscillating circularly curved hooked needle, an oscillating awl, an oscillating discoidal shuttle arranged above the work and having a hook, a loop retractor or spreader for carrying the loop in the path of the shuttle hook, a take-up mechanism below the work support, and means, substantially such as described, for drawing the loop off the shuttle and yielding when the shuttle takes up the loop, as set forth. 12th In a lock-stitch sewing mechanism, the combination of a circularly curved hooked needle, a discoidal shuttle, a hook formed in said shuttle, a looper, a loop retainer, a loop spreader having a reciprocating motion in a plane parallel to the plane of the needle, and intersecting the path of said needle for bringing the loop into the path of the shuttle hook, and a take-up for drawing down the loop to form the stitch after said loop has been taken up by the shuttle, substantially as described. 13th. In a lock-stitch sewing mechanism, the combination of a circularly curved hooked needle, an oscillating shuttle moving in a plane at right angles to the needle, a hook thereon moving outside of the plane of the needle, and a loop spreader or retractor moving up and down in a plane parallel to the needle, and intersecting the path of the needle to receive the thread from the needle and place it in the path of the shuttle, substantially as shown and described. 14th. In a lock stitch sewing mechanism, the combination of the circularly curved hooked needle having an oscillating motion, an oscillating discoidal shuttle rotating in a plane at right angles to the path of the needle, a hook formed on said shuttle and moved in a path not intersecting the path of the needle, a loop spreader or retractor, an arm bearing said loop spreader and a cam operating said arm and which imparts a rising and falling motion to the same, substantially as shown and described. 15th. In a lock-stitch sewing mechanism, having a circularly curved hook needle and an awl working in opposite directions, the oscillating shuttle E above the support for the work, the shuttle driver for the same, a driving shaft extending from said driver and operated by a lever segment, and a cam causing said lever-segment to rotate the shaft, substantially as shown and described. 16th. In a lock-stitch sewing mechanism, having a circularly curved needle and a circularly curved awl, and means to turn said needle and awl about the same centre line but in opposite directions, the combination of an oscillating shuttle, and a shuttle driver mounted upon a shaft extending from said driver at right angles to the centre line of the needle and awl, substantially as shown and described. 17th. The combination, with the oscillating shuttle and loop forming and spreading mechanism, of the swinging take-up bell-crank lever S carrying the pulley S₁, the pivoted arm s₁ carrying the pulley S₂, the link r connected with one arm of the bell-crank lever, the vertical swinging arm v connected with said link, and means for actuating said vertical swinging arm, substantially as described. 18th. The combination, with the oscillating shuttle, the loop forming and spreading devices and the work support, of the take-up lever S directly below the work-support, the pulley S₁ carried thereby, the spring supported arm s₁, the pulley S₂ thereon, the adjustable stop on the take up lever, and means, substantially as shown and described, for actuating the take-up lever from the rear of the machine, substantially as shown and described. 19th. In a lock-stitch sewing mechanism, the combination, with a circularly curved hooked needle having an oscillating motion, a discoidal shuttle having an oscillating motion in a plane at right angles to the plane of the needle, and with loop forming and spreading devices, of the take up lever and its pulley, and the tension wheel having means to enable it to be free to rotate when the shuttle is taking up the thread, substantially as shown and described. 20th. In a lock-stitch sewing mechanism, the combination, with a circularly curved hooked needle having an oscillating motion, a discoidal shuttle having an oscillating motion in a plane at right angles to the plane of the needle and with the loop forming device, of the tension wheel at the rear of the machine, a toothed wheel or wheels connected with the tension wheel, a lever carrying a pawl or pawls engaging with said toothed wheel or wheels, and a cam for oscillating said lever, substantially as shown and described. 21st. The combination, with the shuttle and the needle, of the loop retainer P, the looper N, the cam surfaces engaging the roller studs on a swivel bar, and bell-crank lever to impart to the looper a motion toward the loop retainer and across the needle, substantially as shown and described.

No. 29,002. Hot Water Heating Apparatus.
(*Calorifère à eau*)

Isaac W. Parker and Elwin C. Huntoon, (assignees of Lafayette Huntoon), Natick, Mass., U.S., 25th April, 1888; 5 years.

Claim—1st. The combination, with a series of radiators of a hot water heating apparatus, a series of individual supply and return pipes between said apparatus and radiators, and a supply tank, a pipe n, a branch pipe m connecting said pipe n and tank, and having a check valve, as described, a supplemental tank or receptacle, and siphon-like pipe u, affording a connection for the pipe n with the main tank, substantially as set forth. 2nd. In a hot water heating apparatus, the combination of the central cylindrical water chamber, the rectangular upper and lower supply and discharge chambers, the jacket or wall surrounding said water chamber forming a smoke chamber, the series of supply pipes connected to one side of the upper rectangular supply chamber, the radiators to which said supply pipes are connected, the individual return pipes of said radiators connected to the said lower rectangular water chamber, the main supply pipe and the tank to which the same is connected, substantially as shown and described.

No. 29,003. Automatic Cut-out for Incandescent Electric Lamps. (*Inter-rupteur automatique pour lampes électriques incandescentes.*)

The Ball Electric Light Company, (assignee of William A. Johnson), Toronto, Ont., 25th April, 1888; 5 years.

Claim—1st. The plates F made of mica or other good non-conduct-

ing material, and arranged to form a resistance coil, for the purpose specified, in combination with the legs D, having projecting spindles F, designed to receive and hold the said plates, substantially as and for the purpose specified. 2nd. The legs D, suspended from the cap C and fixed to the non-conducting base plate E, in combination with the plates F, fitted onto spindles G, projecting from the legs D, substantially as and for the purpose specified. 3rd. The legs D, suspended from the cap C and fixed to the non-conducting base-plate E, which carries the electromagnet U, the plates F carried on spindles G, extending from the legs D, in combination with the weighted armature I, bar L and post M, designed to switch the current from the lamp circuit to the resistance coil, substantially as and for the purpose specified.

No. 29,004. Hay Elevator. (*Monte-join.*)

The Ney Manufacturing Company, (assignee of Jacob Ney,) Canton, Ohio, U.S., 25 April, 1888; 5 years.

Claim—1st. In a hay elevator having a track or way A and a travelling carriage, the combination of the stop-block b having the downward extensions c, c, with the detent G having the extensions f, g and h, substantially as and for the purpose specified. 2nd. The combination, in a hay elevator having the frames B and D attached together by a reversible connection, of the detent G, the locking and releasing dogs d, d, pivoted to the frame D, the bell-shaped guide F and with the elevating block H provided with the pin or point E, substantially as and for the purpose specified. 3rd. The combination of the detent G, having the extensions f, g, h and dogs d, d, with the stops having extension c, c, and reversible frame D, substantially as and for the purpose specified.

No. 29,005. Field Filtering Water Bottle.
(*Bouteille-filtre de campagne*)

Patrick Lewis and Eugeno N. Chinc, Quebec, Que., 25th April, 1888; 5 years.

Claim—1st. The combination of the water chamber B with the filtering compartment D, connected by means of the perforated entrance C, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the filtering compartment D, with the filtered water chamber G, connected by means of the perforated entrance F, substantially as and for the purpose hereinbefore set forth. 3rd. The combination of the filtering compartment D, with opening E, substantially as and for the purpose hereinbefore set forth. 4th. The combination of the filtered water chamber G with the lower mouth H, substantially as and for the purpose hereinbefore set forth.

No. 29,006. Automatic Oiler.
(*Graisseur automatique.*)

John T. Smith and Duncan Henderson, San Francisco, Cal., U.S., 25th April, 1888; 5 years.

Claim—1st. A lubricating tube, having its lower end contracted, in combination with an independent disk of metal swaged or compressed into the contracted end of the tube, so as to form a bottom and having a central opening and radial channels in its lower surface intersecting with the central opening, substantially as herein described. 2nd. The lubricating tube, extending downwardly, and a perforated bottom screw or secured within the tube, as shown. 3. A combination with a screw-threaded disk, having a shank or stem extending upwardly into the cup, said disk travelling in corresponding threads in the upper end of the tube, a packing of fibrous material in the lower end of the tube, and a spiral spring having its interior filled with a similar packing, which may be compressed and expanded with the spring by the action of the disk, substantially as herein described. 3rd. A lubricating tube, extending downwardly with a convex perforated bottom fitted into it, as shown, in combination with a screw stem or shank extending downwardly into the tube, having a tapering or conical pointed lower end, and a collar at the upper end of the cone, and the fibrous packing and spring into which the cone point extends, substantially as and for the purpose herein described.

No. 29,007. Platform Scale. (*Balance-bascule.*)

The E. & C. Gurney Company (assignee of James P. Steedman, Thomas Partridge and Andrew Turnbull), Hamilton, Ont., 25th April, 1888; 5 years.

Claim—1st. In combination with an ordinary platform scale, of extension wings attached to the platform, properly braced for increasing the platform area, by which cattle and other heavy stock can be weighed, substantially as specified. 2nd. In combination with a platform scale, of upright posts attached to the platform and surmounted with side rails duly braced, for keeping live stock on the scale while being weighed. 3rd. In a platform scale, the combination, with the platform C, of extensions D, D, movably attached thereto. 4th. In a platform scale, the combination of the platform C, extensions D, D, upright posts b, b, rails d, d, substantially as and for the purpose specified. 5th. In a platform scale, the combination of the platform C, extensions D, D, upright posts b, rails d, braces c, brace rods g and chains i, substantially as and for the purpose specified.

No. 29,008. Ratchet Wrench. (*Cle à écrou.*)

Luther Bryant, Maple Grove, Me., U.S., 25th April, 1888; 5 years.

Claim—1st. In a wrench, the combination of the handle A, collars A₂, A₂, on the upper end thereof, the shaft C mounted in the said collars an l extended on one side thereof to form the rigid jaw E, and on the other side to form the socket or sleeve k, the hand rest K, secured in the said socket, movable jaw F, pivoted to the rigid jaw, the spring G, to hold the jaws normally open, and means, substantially as described, to close the jaws, substantially as specified. 2nd. The combination of the shank A, parallel collars A on the upper end thereof, shaft operating in the openings in the said collars, disk D between the collars, and having ratchet teeth thereon, spring pawls to

engage the teeth sleeve *k* on one end of the shaft, hand-rest *K* therein, upper jaw *E* formed on the other end of the shaft, having a slot *e* therein, movable jaw *F* having a tongue or plate *f* pivoted within the said slot, toothed segment on the said lower jaw, link *H* pivoted to the rigid jaw, and having a pivoted pawl to engage in the ratchet-teeth in the lower jaw, and the spring *G* to actuate the movable jaw, all constructed and arranged substantially as and for the purpose set forth. 3rd. A wrench having the rigid jaw *E*, movable jaw *F* pivoted thereto, and having a toothed segment thereon, link *H* pivoted to the rigid jaw, pivoted pawl *I* in the free end of the said link, having teeth to engage in the said toothed segment, thumb-hold *L* on the said pawl, to enable the same to be raised, and the spring *G* to normally hold the jaws separated, all constructed and arranged substantially as and for the purpose set forth.

No. 29,009. Fire Engine. (Machine à incendie.)

Robert Morrell, Summit, N.J., U.S., 26th April, 1888; 5 years.
Claim.—1st. In a combined fire apparatus, the truck frame supported and constructed substantially as described, with a ladder holder on top of said truck frame, in combination with a pump secured to the under side of the truck frame, between the front and rear axles and entirely out of the way of the ladder holder, as set forth. 2nd. In a combined fire apparatus, the truck frame, constructed and mounted substantially as described, having a ladder holder on its top, in combination with a tank secured to the under side of the truck frame, and a pump secured inside of said tank below the top of the truck frame, said tank being provided with diagonal braces, which hold it rigidly to the truck frame, to prevent the bending of the truck frame and ladders, and the wrenching of the pump as the engine is being operated, as set forth. 3rd. In a combined fire apparatus, the truck frame, constructed with a ladder holder and mounted substantially as described, in combination with a tank secured to the under side of the truck frame, below the top of the truck frame, between the axles and wheels, and provided with a pump, which is also secured at its upper end to the under side of the truck frame, and which pump is secured to the tank at its lower end, thus forming a truss support for the truck frame, and a rigid support for the tank and pump, substantially as described. 4th. In an improved fire apparatus, the combination, in one portable machine, of a suitable truck and truck frame of the character described, a pump and its adjuncts suspended from the truck frame between the wheels and axles, the ladder holder mounted on the top of the truck frame, and the hose reel mounted on the hind axle of the truck, substantially as shown and described. 5th. In a combined fire apparatus, the truck frame mounted and constructed with a ladder holder on its top, in combination with a tank and pump secured to the lower side of the truck frame, said tank having diagonal braces which hold it firmly in place on the truck frame, and said pump being secured at the top to the truck frame, and to the tank at its bottom, substantially as and for the purposes specified. 6th. In a combined fire apparatus, the truck frame provided with a water tank and a pump, in combination with a filling spout extending out of range of the pump brakes, substantially as described. 7th. In a combined fire apparatus, the truck frame constructed and mounted substantially as described, and provided with a pump and tank on its under side, in combination with the independent vertically-adjustable legs, each of which is provided with means for locking it in any desired adjusted position, against movement in any direction without disturbing the leg as it rests on the ground, substantially as described.

No. 29,010. Process and Apparatus for Cleansing Wool and other Textile Products, also applicable to the Extraction and Recovery of Oils and Fats. (Procédé et appareil de nettoyage de la laine et autres produits textiles, aussi applicables pour extraire et récupérer les corps gras.)

Ignatius Singer and Moritz W. Judell, Adelaide, Australia, 26th April, 1888; 5 years.
Claim.—1st. The process of passing, by means of a double endless band and system of rollers, wool and other similar products, continuously through a constantly flowing counter current of bisulphite of carbon or other suitable solvent for the purpose of removing grease and other impurities, substantially as herein described. 2nd. The process of expressing the solvent without heat by rollers, and afterwards passing the wool through a heated chamber provided with heated rollers, and a counter-blast of heated air for the purpose of removing the remaining traces of the solvent, substantially as herein described. 3rd. The process of obtaining a self-regulating and continuously automatic circulation of the solvent by causing the overflow into the evaporating retort to be dependent upon the inflow into the macerator of the same solvent when condensed, substantially as herein described. 4th. The filtration of the resultant grease or fat whilst in a diluted and solvent state, whereby it is recovered in a pure condition, substantially as herein described. 5th. In the construction of the apparatus for cleansing wool in a continuous manner by bi-sulphide of carbon, the double endless bands *M*, *M'*, the macerator *A* divided into cells by the partitions *A*, *A*, the rolls *a*, *a* and the idlers *a*, the settling chamber *c*, the filter *d* and the partitions *j*, *j*, substantially as herein described and for the purpose indicated. 6th. The method of cleansing wool from sand and earthy impurities during maceration, and the removal of the same from the macerator by means of dredges, substantially as herein described. 7th. In the construction of the drying chamber *C*, the roll *x* to *x*, the heated rolls *z* to *z*, provided with endless bands *z*, *z*, the plate *P* and the hot blast pipes *v*, *v*, substantially as herein described and for the purposes indicated. 8th. The providing and directly connecting, in a continuous manner, the macerator *A* with the drying chamber *C*, substantially as herein described. 9th. The method of concentrating the resultant solution by causing it to flow along the entire length of the coils of a spiral steam pipe, substantially as herein described and shown in Fig 6. 10th. The whole apparatus as a combination of parts.

No. 29,011. Memorial Tablet.

(Pierre tumulaire.)

Isaac Mills, Hamilton, Ont., 26th April, 1888; 5 years.
Claim.—In a glass memorial tablet, the combination of two plates of glass of any size or shape, having suitable words, figures and recess on one plate, and the two fastened together as one head memorial or monument, substantially as and for the purpose hereinbefore set forth.

No. 29,012. Tailor's Iron. (Carreau.)

Frderick W. Eisenberg, Ann Arbor, Mich., U.S., 26th April, 1888; 5 years.
Claim.—In a tailor's iron, the combination, with the body *A*, rigid top plate *B*, neck *C*, cover *D*, handle *E*, locking slide *F*, deflecting plate *I*, draft doors *J*, hinged bottom *K*, formed at one end with upwardly projecting lug *L* and threaded locking pin *M*, the parts being constructed, arranged and operating substantially in the manner and for the purpose set forth.

No. 29,013. Letter and Bill File.

(Serre-papier.)

Adelbert R. Balcom, Toronto, Ont., 26th April, 1888; 5 years.
Claim.—1st. The frame *A*, having an elliptical opening *E* and a stationary arched pin *B*, in combination with an adjustable pin *C* and bar *D*, substantially as shown and described and for the purpose specified. 2nd. The frame *A*, having an elliptical opening *E* formed therein, and a stationary arched pin *B*, in combination with an adjustable pin *C*, bar *D*, having flange *D'*, spring *F*, having flange *F'*, and saddle *G*, substantially as shown and described and for the purpose specified. 3rd. The frame *A*, having elliptical openings *E* and stationary arched pins *B*, *B*, in combination with the adjustable pins *C*, *C*, and connecting bar *D*, substantially as shown and described and for the purpose specified. 4th. The frame *A*, having elliptical openings *E* and stationary arched pins *B*, *B*, in combination with the adjustable pins *C*, *C*, connecting bar *D* having flange *D'*, spring *F* formed with flange *F'*, and saddles *G*, substantially as shown and described and for the purpose specified.

No. 29,014. Snow-Shoe. (Raquette.)

Henry Watson, Donald, B.C., 26th April, 1888; 5 years.
Claim.—1st. The construction of the body of the snow-shoe *A* from wood and the leather bearings *G* for the foot, with the extension toe-strap *M*, substantially as and for the purpose hereinbefore set forth. 2nd. The combining of the three-cornered pieces of wood *K* and *L* and the body of the shoe *A*, substantially as and for the purpose hereinbefore set forth.

No. 29,015. Steam Ploughing on the Double Engine System. (Système de labourage à vapeur à double machine.)

Rudolf Katz, Gross-Kostomlat, Austria, 26th April, 1888; 5 years.
Claim.—1st. The described method of continuously utilizing both engines in steam ploughing on the double engine system, the said method consisting in arranging a suitable transmission by which both engines are caused simultaneously to exert their power upon the implement moving in either direction. 2nd. In steam ploughing on the double engine system, the arrangement, beside the ropes connecting the agricultural implement to the drums of the locomotive engines, of a freely running rope doing the office of a transmission, and having its ends so coiled round drums mounted upon the axis of the first named drums, as always to move in the opposite direction of the rope connected to the implement, and thereby to assist in dragging the implement in either direction. 3rd. In steam ploughing on the double engine system, the combination, with two double drum ploughing engines, of a rope, the ends of which are coiled round the two lower drums and into which the agricultural implement is interposed, and of a second rope, the ends of which are coiled round the two upper drums in the opposite direction of the coiled ends of the other rope, the said second rope running freely from drum to drum and acting as a transmission, all as shown and described.

No. 29,016. Apparatus for Heating Cooking by Gas or Liquid Fuel. Appareil de chauffage ou de cuisine au gaz ou au combustible liquide.)

Lewis W. Leeds, London, Eng., 26th April, 1888; 5 years.
Claim.—1st. In a gas or liquid fuel stove, the combination, with the burners arranged in the open air, of a layer of refractory material arranged over the burners, said layer being adapted to deflect and radiate heat to the floor, substantially as described. 2nd. In a gas or liquid fuel stove, the combination, with the burners, of a layer of refractory material, arranged over the burners, and a reflecting and deflecting surface *D* arranged below the refractory material, substantially as and for the purpose set forth. 3rd. In a gas or liquid fuel stove, the combination, with the burners, of a layer of refractory material over the burners, and a reflecting and deflecting surface *D* of polished material, one or more of the sides of the stove below the refractory material being of transparent material, substantially as described. 4th. In a gas or liquid fuel stove, the combination, with the burners, of a heat deflector of refractory material, as asbestos or kindred material, and some transparent material, as glass, arranged above the burners, substantially as described. 5th. In a gas or liquid fuel stove, having a closed casing, the combination, with the burners, of a heat deflector of refractory material, as asbestos or kindred material, and some transparent material, as glass, arranged above the burners, and a reflecting and deflecting surface *D* below the burners, the casing of the stove having transparent portions both above and below the deflecting refractory material, substantially as

described. 6th. In a gas or liquid fuel stove, the combination, with the burners, of a deflecting arch C, composed of asbestos or kindred material, and strips e of glass arranged over the burners, substantially as described.

No. 29,017. Fruit Knife. (*Couteau à fruits.*)

Luther C. McNeal, Rochester, N.Y., U.S., 26th April, 1888, 5 years.

Claim.—1st. A fruit knife having a blade formed with a short part b, to separate the rind from the meat of the fruit, said part having a dull rounded or non-cutting edge, and a sharp-edged cutter a, at one end of said part b, to divide the rind into a strip as it is raised by the part b, said cutter being turned inwardly to one side of said part b, to form an angle therewith, substantially as shown. 2nd. A fruit knife having a blade formed with a part b, to separate the rind from the meat of the fruit, and a cutter a at one end of said part b, to divide the rind into a strip as it is raised from the meat of the fruit by said part b, and a guard for said cutter, substantially as shown. 3rd. A fruit knife having a blade formed with a short part b, to separate the rind from the meat of the fruit, and a cutter a at one end of said part b, to divide the rind into a strip as it is raised from the meat of the fruit by said part b, and a guard for said cutter, substantially as shown. 4th. A fruit knife having a blade formed with a short part b, to separate the rind from the meat of the fruit, and a cutter a at one end of said part b, to divide the rind into a strip as it is raised from the meat of the fruit by said part b, said cutter being turned laterally to one side of said part b, to form an angle therewith, the lower end of said cutter a being above the under surface of said part b that is next the fruit, substantially as and for the purpose specified.

No. 29,018. Fluid Pressure Automatic Brake Mechanism. (*Frein atmosphérique.*)

George Westinghouse, Jr., Pittsburgh, Penn., U.S., 26th April, 1883; 15 years.

Claim.—1st. In a brake mechanism, the combination of a main air pipe, an auxiliary reservoir, a brake-cylinder, a triple valve and an auxiliary valve device actuated by the piston of the triple valve, and independent of the main valve thereof, for admitting air in the application of the brake directly from the main air pipe to the brake-cylinder, substantially as set forth. 2nd. In a brake mechanism, the combination of a main air pipe, an auxiliary reservoir, a brake-cylinder and a triple valve having a piston whose preliminary traverse admits air from the auxiliary reservoir to the brake-cylinder, and which by a further traverse admits air directly from the main air pipe to the brake-cylinder, substantially as set forth. 3rd. In a brake mechanism, the combination of a main air pipe, an auxiliary reservoir, a brake-cylinder and a triple valve having a piston whose preliminary traverse admits air from the auxiliary reservoir to the brake-cylinder, and which, by a further traverse, admits air directly from the main air pipe to the brake-cylinder, and effects a second admission of air from the auxiliary reservoir to the brake-cylinder, substantially as set forth. 4th. The combination, in a triple valve device, of a case or chest, a piston fixed upon a stem and working in a chamber therein, a valve moving with the piston-stem and governing ports and passages in the case leading to connections with an auxiliary reservoir and a brake-cylinder, and to the atmosphere respectively, and an auxiliary valve actuated by the piston, stem and controlling communication between passages leading to connections with a main air pipe and with the brake-cylinder respectively, substantially as set forth. 5th. The combination, in a triple valve device, of a case or chest, a piston fixed upon a stem and working in a chamber therein, a valve moving with the piston stem and governing parts and passages in the case leading to connections with an auxiliary reservoir, and a brake-cylinder, and to the atmosphere respectively, an auxiliary valve actuated by the piston stem, and controlling communication between passages, leading to connections with a main air pipe, and with the brake-cylinder respectively, and a check or non-return valve interposed between the auxiliary valve and the passage leading therefrom to the brake-cylinder, substantially as set forth. 6th. The combination, in a triple valve device, of a case or chest, a piston fixed upon a stem and working in a chamber therein, a valve moving with the piston stem and governing parts and passages in the case, leading to connections with an auxiliary reservoir and a brake-cylinder, and to the atmosphere respectively, an auxiliary stem mounted in the cap of the case in position to be moved longitudinally by the piston stem in the latter portion of its traverse in the direction required for the application of the brakes, a spring bearing against a collar on the auxiliary stem and against a fixed abutment, and an auxiliary valve connected to the auxiliary stem, and controlling communication between passages leading to connections with a main air pipe, and with the brake-cylinder respectively, substantially as set forth. 7th. The combination, in a triple valve device, of a case or chest, a piston fixed upon a stem and working in a chamber therein, an auxiliary valve actuated by the piston stem, and controlling communication between passages leading to connections with a main air pipe, and with a brake-cylinder respectively, and a main valve connected to the piston stem and governing ports and passages in the case leading to connections with an auxiliary reservoir and a brake-cylinder, and to the atmosphere respectively, said main valve having a supplemental port or passage, which establishes communication between the auxiliary reservoir and brake-cylinder connections at or near the limit of the traverse of the main valve in effecting the application of the brake under maximum pressure, substantially as set forth.

No. 29,019. Nail Plate Feeding Machine.

(*Machine d'alimentation des barres à clou.*)

Charles S. Watson, in trust for the Montreal Rolling Mills Company, Montreal, Que. (assignee of Charles E. McKim, Martin's Ferry, Ohio, U.S.), 27th April, 1888. No issue of patent No. 24,583.

Claim.—1st. The combination, in a nail plate cutting mechanism,

of a drive-shaft having an eccentric, an oscillating arm carrying the plate holding barrel, a connecting rod articulated to the eccentric and to the oscillating arm, a pinion secured upon the drive shaft, a cog-wheel meshing with the pinion being of twice the diameter of the pinion and having a crank and pin, a rocking lever, a pitman connecting the crank and the lever, a rock shaft imparting rotary reciprocating motion to the plate-holding barrel E, having spiral cogs F engaging with pinion G, which is provided with spiral cogs H, and having a crank at its end, and a connecting-rod articulated to the crank and to the other end of the rocking lever, the pivoted point of the pitman and lever being concentric with the fulcrum of the oscillating barrel-carrying arm when the lever is in its horizontal position, substantially as shown and described. 2nd. In a nail plate feeding mechanism, the combination, with an oscillating arm carrying the plate-holding barrel for rotary reciprocating the said barrel E, having spiral cogs F engaging with pinion G, which is provided with spiral cogs H, of a rocking lever having means for raising the plate holding barrel and rocking up and down once for every two oscillations of the arm, and having its end concentric with the fulcrum of the oscillating arm when the lever is in its horizontal position, substantially as shown and set forth. 3rd. In a nail plate feeding machine, the combination of an oscillating arm carrying the rotary reciprocating plate holding barrel, and provided with a rearwardly-extending bracket having a yielding cylindrical bearing, a cylindrical rack-bar provided with the plate-clamping nippers, and sliding and turning in the cylindrical bearing, a shaft journaled transversely in the side of the bearing, and having a pinion at its upper end meshing with the cylindrical rack-bar, and means of revolving the said shaft a portion of a revolution at each stroke of the oscillating arm, substantially as shown and described. 4th. In a nail plate feeding machine, the combination of an oscillating arm carrying the plate-holding barrel, a plate-feeding rack-bar sliding in bearings upon the said arm, a shaft having a pinion meshing with the rack-bar and provided with a ratchet wheel at its lower end, a bar sliding in bearings upon the arm and engaging the ratchet wheel with one end, and the upright post secured upon the base of the machine having its end projecting into the latter portion of the forward stroke of the sliding rod with the arm, as and for the purpose shown and set forth. 5th. In a nail plate feeding machine, the combination of a revolving barrel, a plate feeding cylindrical rack-bar, a bearing for the said rack-bar, a shaft having a pinion engaging the said rack-bar and having a ratchet wheel, a sliding rod engaging the ratchet wheel with one end and having a spring throwing it back from the wheel, and means, as described, for pushing the said sliding rod against the teeth of the ratchet wheel, the whole substantially as shown and described. 6th. The combination of the ratchet wheel, the sliding rod having the spring forcing it forward, the bearing having a perforation wider than the rod, and having a spring forcing the end of the rod against the ratchet wheel, and means for forcing the rod rearward at each stroke of the plate-carrying arm, as and for the purpose shown and described. 7th. The combination of the shaft having the feeding pinion and the detachable ratchet wheel, the sliding rod having the pawl-shaped end, the bearing having the aperture wider than the rod, and having the spring forcing the end of the rod against the ratchet wheel, the bearing having the recess in one end, the adjustable collars secured upon the rod at both ends of the bearings, the spiral spring placed around the rod in the recess in the bearing, bearing against the rearmost of the collars and the adjustable post, the whole substantially as shown and described. 8th. The combination in a nail plate feeding machine, of a drive-shaft having an eccentric, an oscillating arm carrying the plate-holding barrel, a connecting rod connecting the eccentric and the arm, a rocking lever, means for rocking said lever once for every two revolutions of the drive-shaft, a rock shaft having a crank at one end for rotary reciprocating the plate-holding barrel E, having spiral cogs F engaging with pinion G, which is provided with spiral cogs H, and pitman pivoted to the crank and to the end of the rocking lever, as and for the purposes shown and described.

No. 29,020. Can Opener.

(*Ciseau à boîte métallique.*)

William Phillips, Philadelphia, Penn., U.S., 27th April, 1888; 5 years.

Claim.—1st. A can opener having a cutter, a handle, an adjustable stem fitted to said handle, and a spring connected with said stem adapted to restore it to its normal position, said parts being combined and operating substantially as described. 2nd. A can opener having the handle A, the sliding stem B with a stop D, a spring bearing against stop D, and handle A, all substantially as described. 3rd. A can opener having the handle A with recess E, the sliding stem B with stop D, and the cutter F fitted on the stem, and located in recess E, all substantially as and for the purpose set forth.

No. 29,021. Feed Mechanism for Saw-Mill Carriages. (*Mécanisme d'alimentation des charriots de scieries.*)

Andrew E. Hoffman, Fort Wayne, Ind., U.S., 27th April, 1888; 5 years.

Claim.—1st. As a means for transmitting a reciprocating movement to log carriages, the combination, with the carriage, of a traction ribbon placed underneath and secured to the respective ends of said carriage, companion driving drums bearing against the under side of said ribbon and rotating in opposite directions relative to each other, and the adjustable clamping rollers located above and adapted to have alternate frictional contact with said ribbon in a line with said frictional driving drums, substantially as and for the purpose set forth. 2nd. The combination, with a log carriage, of a frictional traction ribbon, the ends whereof are secured to the respective ends of said carriage, the friction driving drums placed underneath said ribbon and rotating in opposite directions, the friction clamping rollers arranged above said ribbon, and the means described for alternately throwing said rollers into a clamping position relative to the driving drums, whereby the traction ribbon is clamped between the same, and a reciprocating movement imparted to the log carriage, as

set forth. 3rd. As a means for transmitting a reciprocating movement to log carriages, the combination, with the carriage, of a traction ribbon secured underneath to the respective ends of said carriages, the friction gripping rollers mounted on the shafts *a*, *a*, the rocker plates or arms *b*, *b*, *b*, pivoted at their outer ends to the standards *c*, *c*, said shafts being journaled in the central part of said arms, the connecting rods *D*, *D*, pivoted at their upper ends to the inner ends of said plates or arms, the rocker arm *d*, the rods *d*, *d*, the rock shaft *D* upon which said arm *d* is mounted, and the operating lever secured on the end of said rock shaft, all substantially as and for the purpose set forth. 4th. In a means for transmitting motion to log carriages, the combination, with a traction ribbon properly secured to said carriage, of the friction driving drums located underneath and in the pathway of said ribbon and rotating in opposite directions relative to each other, the friction gripping rollers placed above said ribbon, and in line with said drums, the rocker plates or arms *b*, *b*, *b*, in which the shafts carrying the gripping rollers are journaled, the connecting rods *D*, *D*, constructed in two parts the respective joining ends having a right and left screw thread, the sleeve or sleeve *e* correspondingly threaded and adjustably connecting said ends, the rocker arm *d*, the rods *d*, *d*, the rock shaft *D* and the operating lever mounted on said shaft, substantially as and for the purpose set forth. 5th. The combination, with the rocker plates *b*, *b*, *b*, and the friction gripping rollers journaled in the same of the connecting rods *D*, *D*, constructed in two parts and having the joining ends threaded, as described, the sleeve or sleeves *e* correspondingly threaded and adjustably connecting said ends, the rocker arm *d* and the rock shaft *D*, upon which said rocker arm *d* is mounted and projects laterally from both sides of the same, substantially as and for the purpose set forth. 6th. The combination, with the log carriage, of the brackets *B*, the traction ribbon *B*, the tightening bolts *a*, *a*, provided with the rectangular head *a*, the clamping plate *a*, and the bolts *a*, whereby said ribbon is secured in position relative to said carriage, as set forth.

No. 29,022. Ore Pulverizer. (Broyeur de Minerai.)
Henry H. Eames, Baltimore, Md., U.S., 27th April, 1888; 5 years.

Claim.—1st. In a machine for pulverizing ore, the combination of a casing, a rotating shaft, a disk, flanged hubs by which the said disk is secured to the said shaft, arms secured to the said disk, and beaters attached to the end of said arms, for the purpose set forth. 2nd. In a machine for pulverizing ore, the combination of a casing, a rotating shaft, a disk, flanged hubs by which the said disk is secured to the said shaft, arms constructed in a curved or bent form, the said arms placed on each side of the said disk and secured thereto, beaters attached to the ends of the said curved arms, and division plates for dividing the pulverizer into compartments, the said division plates being provided with openings therein, for the purpose set forth. 3rd. In a machine for pulverizing ore, the combination of a casing, a rotating shaft, a disk having perforations therein, flanged hubs, by which the said disk is secured to the said shaft, arms secured to the said disk, and beaters attached to the ends of the said arms, for the purpose set forth. 4th. In a machine for pulverizing ore, the combination of a cylindrical casing, the inner surface of which is corrugated, a rotating shaft, a disk provided with perforations therein, flanged hubs by which the said disk is secured to the said shaft, curved arms secured on each side of said disk, angular division plates for dividing the pulverizer into compartments, the openings in each being respectively of different areas, and beaters attached to the ends of said arms, for the purpose set forth.

No. 29,023. Hasp Lock. (Serrure à morillon.)

Brunswick W. Leonard, Old Saybrook, Conn., U.S., 27th April, 1888; 5 years.

Claim.—1st. In a hasp lock, a hasp combined with a bolt pivotally connected with, and also having a longitudinal movement or adjustment along said hasp, and a tumbler for securing such bolt in locking position, substantially as set forth. 2nd. The combination of the hasp, having slot *a* and inwardly projected studs *a*, *a*, and the bolt having its head formed with slots *a*, *a* in its inner face or side, adapted to receive the studs *a*, substantially as set forth. 3rd. The combination, with the hasp, of the bolt having a lock case, the pivot stud having a portion *1* journaled to the hasp, a portion *3* fitting a slot in the lock case, and a head *4* and a tumbler supported in the case and arranged to engage the pivot stud, substantially as set forth. 4th. The combination, with the staple, of the hasp and the bolt having the hook *f*, *t*, and a slot or slots *f*, said bolts being movable pivotally and longitudinally with reference to the hasp, and a tumbler for securing the bolt in locked position, substantially as set forth. 5th. A hasp lock comprising the hasp, the pivot stud *C*, having portions *1*, *3* and head *4*, the bolt having a lock case and a bolt proper, the latter having slots *f* and hook *f*, and the lock case being slotted at *e*, to receive the pivot stud, and a tumbler supported in the lock case and adapted to engage the pivot stud, whereby to secure the bolt in locked position, substantially as set forth.

No. 29,024. Lasting Machine. (Machine à enformer.)

Isaac Fréchet, St. Hyacinthe, Que., 27th April, 1888; 5 years.

Claim.—1st. In the above described lasting machine, the movable nipper shown, arranged to slide in the cross-head *B*, provided with the arms *e*, in which is pivoted the swinging jaw *F*, substantially as shown and described. 2nd. A fork having its handle *A* working in a suitable guide, and its tines *e* attached to the pin *t*, which passes through slots in the arms *e*, and through a curved slot in the shank of the spring swinging jaw *F*, substantially as shown and specified. 3rd. The chambered lug *I*, having an approximately oval-shaped interior, in which the pin *t* of the crank *t*, on the main shaft *H*, circulates, to cause the vertical movement of the fork, and thereby operate the swinging jaw *F*, substantially as herein described and for the purpose set forth. 4th. In a lasting machine, a combination of the movable nipper provided with the shoulder *d*, and arranged to slide

with the took funnel of a tacking or pegging machine, substantially as shown and for the purpose set forth. 5th. The combination of a pegging or tacking machine with a lasting machine, attached adjustably to said pegging or tacking machine by the knee *E*, and consisting essentially of a movable nipper, having the shoulder *d*, arms *e* and swinging jaw *F*, pivoted to said arms, the chambered lug *I* attached to a fork by means of which the jaw *F* is operated, and the spring for holding the nipper forward, substantially as shown and described.

No. 29,025. Hair Curling and Crimping Device. (Fer à friser et froncer les cheveux.)

Mark Campbell, Chicago, Ill., U.S., 27th April, 1888; 5 years.

Claim.—1st. In curling and crimping devices, the combination of a handle, a heating core and a cylinder, tube, casing or jacket, operatively located exterior of said core, the arrangement of said parts being such that either the core or the outer member is fixed to the handle, and the other member is capable of movement longitudinally thereof, for a distance sufficient to expose said core, substantially as shown and for the purpose set forth. 2nd. In curling and crimping devices, the combination, with a heating core and a cylinder, tube, casing or jacket, operatively located exterior thereof, of an air-circulating space interposed between said members, substantially as shown and described.

No. 29,026. Apparatus for Saturating Steam with Hydro-Carbons, Generating Gas of Combustion and Effecting their Union in Furnaces. (Appareil pour saturer la vapeur avec des hydrocarbures, générer le gaz combustible et effectuer leur union dans les fourneaux.)

John Livingston, Toronto, Ont., 27th April, 1888; 5 years.

Claim.—1st. The vessel *A*, as an apparatus for mixing steam with the vapours from oil, by having perforated pipes or plates, or perforated pipes and plates, in combination between the oil within the vessel and the outlet for the steam, as hereinbefore described and for the purpose specified. 2nd. The super-heaters *U*, having an outer casing and an inner perforated tube, with a space between filled with broken iron, and one or more nozzles *F*, as hereinbefore described and for the purpose specified. 3rd. The combination of the vessel *A*, used as mixer of steam and the vapours from oil, with the super-heaters *U* in a furnace, for the more perfect combustion of the fuel, as hereinbefore described and for the purpose specified.

No. 29,027. Apparatus for Manufacturing, Heating and Illuminating Gas. (Appareil à gaz de chauffage et d'éclairage.)

William A. Myers and Samuel H. Albee, Bolivar, N. Y., U. S., 27th April, 1888; 5 years.

Claim.—1st. An apparatus for manufacturing carburated hydrogen gas from oils, consisting essentially of a vertical retort, a pipe for admitting a mixture of oil and steam or air into said retort, terminating in proximity to the bottom of the retort, a gas discharge pipe, a second retort or super-heater, a gas inlet pipe terminating in proximity to the bottom of said second retort, a gas main at the top of the latter, and a steam or air heating pipe passing through the second retort and discharging into the gas main at the top of said second retort, substantially as described. 2nd. The combination, with the retort, of the air or steam pipe having a communicating pipe leading from an oil reservoir, a super-heater connected to the retort by a horizontal section of pipe, a siphon pipe communicating with said section to receive the tar, and a second pipe conveying air or steam and traversing the super-heater, and delivering its heated contents to be mingled with the super-heated gas at or near the entrance to the main, substantially as described.

No. 29,028. Carburetor or Apparatus for Enriching or Producing Gas. (Carbureteur ou appareil pour enrichir ou produire le gaz.)

Robert S. Lawrence, Philadelphia, Penn., U. S., 28th April, 1888; 5 years.

Claim.—1st. In a carburetor, a condensation chamber located in the upper portion of the generator, of which the bottom of the reservoir forms the top wall, and a layer of filtering and badly conducting material the bottom wall, for the purposes set forth. 2nd. In a carburetor provided with a condensation chamber in the upper portion of the generator, the combination, with the main inlet pipe provided with a stop-cock, of a sub-distributing pipe located in said chamber, and a branch inlet pipe provided with a cock connecting said main inlet and sub-distributing pipes, for the purposes stated. 3rd. In a carburetor provided with a condensation chamber in the upper portion of the generator, the combination, with the gathering pipe located in said chamber, of a perforated distributing plate, also located in said chamber and beneath said pipe, for the purpose set forth. 4th. In a carburetor, the combination, with a valve, provided with a valve stem and a valve seat in the bottom of the reservoir, through which the valve stem passes, of a float and suitable connections between the float and stem to operate the valve, for the purpose set forth. 5th. In a carburetor, the combination, with the slotted central supporting tube, a lever pivoted therein, the float-rod tube inside the supporting tube, a float-rod inside the float-rod tube, a float to which one end of the rod is attached, the other end being connected to one arm of the lever, and a right angularly bent rod, one end of which is connected to the lever, the other end passing through the slot in the supporting tube of a conical valve, a valve stem plug secured in the bottom of the reservoir, and a valve stem, one end of which is

secured to the angular rod, and the other end of which passes up through the valve seat plug and bears the valve, substantially as described.

No. 29,029. Syrup Pail. (*Seau à sirop*.)

Henry S. Cano, Newmarket, Ont., 28th April, 1888; 5 years.

Claim—A pail having a sunken head in combination with a lipped spout fitted into the bung-hole, the point of the spout extending over the edge of the pail, substantially as and for the purpose specified.

No. 29,030. Detachable Fastener for Neck Yokes. (*Ferrure mobile de volets d'avant*.)

Adolph P. Koch and William C. Koch, Effingham, Ill., U. S., 28th April, 1888; 5 years.

Claim.—1st. A detachable fastening for neck-yokes, consisting of a sleeve adapted to engage the end of the neck-yoke, having an extended recess adapted to register with a correspondingly shaped projection on the neck-yoke end, and slotted projections to receive a harness collar strap, substantially as described. 2nd. The combination, with a neck-yoke ferrule, having a lateral projection or lug, of a detachable sleeve with an extended recess or slot adapted to register with said lug or projection on the ferrule, and strap-retaining projections, substantially as described. 3rd. The combination, with a neck-yoke having a ferrule provided with a lateral lug or projection, of a detachable sleeve with an extended recess or slot engaging said ferrule, and a harness collar strap passing through slotted retaining projections in said detachable sleeve, substantially as described. 4th. The combination, with a neck-yoke 7, having projection 8, of a detachable sleeve 1, having an extended recess 3 and projections 4 with slots 5, and a harness collar strap 9 passing through said slots 5, substantially as described.

No. 29,031. Device for Preventing Water Pipes from Freezing. (*Appareil pour empêcher de geler les tuyaux d'eau*.)

Frederick Steinkoenig and Valentine Martz, Cincinnati, Ohio, U. S., 28th April, 1888; 5 years.

Claim.—1st. The service or branch pipe, having a stop-cock at one end and a union, as D, at the opposite end, with the hollow stem for actuating said cock and passing through said union and branch pipe, whereby the water is turned on or off at the main, and air admitted to the cock when closed, for the purpose of exhausting the branch pipe, substantially as specified. 2nd. The combination, substantially as specified, of the cock having air and water passages, the hollow stem, having branches communicating with the cock when closed, the service branch pipe C having stop-cock C1, and the union D provided with branch E and waste-cock F, the several parts combined to operate as and for the purpose set forth. 3rd. The service or branch pipe, having stop-cock at one end, an intermediate stop-cock C1 and a union, as D, at the opposite end, with the hollow stem for actuating said cock and passing through said service pipe, with union intermediate stop-cock, whereby the water is turned on or off at the main, and air admitted to the cock when closed, for the purpose of exhausting the branch pipe, substantially as specified.

No. 29,032. Combined Clock and Electric Alarm for Hotels. (*Horloge et avertisseur électrique pour les hôtels*.)

Arthur B. Harford, East Saginaw, Mich., U.S., 28th April, 1888: 5 years.

Claim.—1st. In a system of electric bells for the rooms of hotels, etc., the combination, with an annunciator and a clock, substantially as described, of a switch-board consisting of a separate series of terminals corresponding with each hour upon the dial, each series comprising a terminal from each room, a terminal for the full hour, and terminals for each of the contacts upon the clock dial between the full hour and the next succeeding, and means, substantially as described, for connecting the circuit of any room with the circuit of any particular contact point on the clock, substantially as and for the purposes described. 2nd. In a system of electric signal bells for the rooms of hotels, etc., the combination, with the bell circuits, clock and a suitable switch-board of an annunciator at the office connected in the circuit, substantially as described, to automatically indicate when the circuit is closed by the clock what rooms have been signalled, substantially as and for the purpose described. 3rd. In a system of electric signal bells for the rooms of a hotel, etc., the combination, with the room circuits, the clock having a circuit closing hand, an annunciator at the office in the circuit to automatically indicate the rooms which have been signalled, and a suitable switch-board, of the mechanism for simultaneously closing all the circuits through the said bells for use in case of fire or other emergency, substantially as and for the purposes described. 4th. A simultaneous signal apparatus consisting of a suitable frame or support, through which the wire leading to any room and the wire returning from the same room pass upon separate springs or conduits, a metallic bar having points or projections adjacent, but out of contact, with each of said conduits, and a lever or other actuating mechanism whereby the said bar is shifted to bring its projections into contact with said conduits, substantially as described. 5th. A simultaneous signalling apparatus E consisting of a sliding bar e, with projections e1, spring conduits e2 and lever e3, substantially as and for the purpose described. 6th. In a system of electric signal bells for the rooms of a hotel, etc., the combination, with the usual push-button circuit of any room embracing the office annunciator, its annunciator bell, and an office battery, of a shunt-wire connecting the push-button circuit in the room through a bell and local battery with a ground, and a similar shunt-wire in the office connecting the push-button circuit, a switch-board and a clock with the ground, said switch-board having independent wires leading to terminals on the clock dial and adapted to connect the room with any such terminal, the construction being such that the clock may close the circuit through the annunciator,

the room battery and the room bell, while the push-button is open and the occupant may, by his push-button, close the circuit through the annunciator, and the office bell when the clock-circuit is open, substantially as described. 7th. In an electric signal system, the combination, with a circuit embracing room signal bells and a clock, of a switch-board, strip or series for any hour, the same consisting of a disk or contact corresponding with each room circuit with a series of terminal strips, and terminal plates arranged around or adjacent to each said room disk, said terminals corresponding with the respective contacts on the clock which correspond with intervals of fifteen minutes, more or less, during said hour, the construction being such that the disk may be connected with one or more of said terminals by pin or other connecting mechanism, substantially as described.

No. 29,033. Process of Reducing Refractory Oxides and Producing Metals, or Metallic Alloys or Compounds, by Electricity and Apparatus for the purpose. (*Procédé de réduction des oxydes réfractaires et de production des métaux, ou alliages ou composés métalliques par l'électricité, et appareil pour cet objet*.)

Paul L. T. Héroult, Neuhausen, Switzerland, 28th April, 1888; 5 years.

Claim.—1st. The herein described electrolytic process of reducing refractory oxides and producing metals, which consists in subjecting the oxide to the action of a current of electricity, thereby fusing and electrolyzing such oxides and utilizing, after commencement of the operation, metal reduced from the oxides as a negative electrode. 2nd. The herein described electrolytic process of producing metallic alloys or compounds, which consists in fusing by electricity not only metal to be alloyed or compounded, but likewise an oxide of the substance to be alloyed or compounded therewith, and simultaneously electrolyzing the said oxide, metal to be alloyed or compounded being utilized as a negative electrode. 3rd. The herein described improvement in the process of producing by electrolysis metals or their alloys or compounds, which consists in subjecting an oxide without a flux to the action of an electric current passed through and in presence of a positive electrode of carbon. 4th. The herein described electrolytic process of reducing refractory oxides and producing metals, or alloys, or compounds, which consists in melting and electrolytically decomposing oxides without a flux in a carbon crucible between an adjustable positive electrode of carbon and the bottom of the crucible, the carbon electrode being such as may be regarded as a soluble electrode, that is to say, being continuously consumed during the reduction by the oxygen disengaged from the oxide treated, thereby preventing polarization and by its consumption yielding some energy, thereby economising electrical energy and copper, or other metal to be alloyed or compounded, or metal reduced from oxide after the commencement of the operation being used as a negative electrode. 5th. The herein described electrolytic process of producing alloys of aluminium, which consists in melting and electrolytically decomposing alumina located between a positive electrode of carbon and a negative electrode of the metal with which the reduced aluminium is to be alloyed, said alumina and said metallic negative electrode being both melted by the electric current, substantially as herein set forth. 6th. The herein described electrolytic process of producing aluminium bronze, which consists in melting and electrolytically decomposing alumina located between a positive electrode of carbon and a negative electrode of copper, said alumina and copper being both melted by the electric current, substantially as herein set forth. 7th. The herein described electrolytic process of producing copper alloys, which consists in melting and electrolytically decomposing oxides located between a positive electrode of carbon and a negative electrode of copper, said oxides and copper being both fused by the electric current, substantially as herein set forth. 8th. An apparatus for the reduction by electrolysis of refractory oxides for producing metals, or metallic alloys, or compounds, the combination of a carbon crucible a, a positive electrode b of carbon, a plate c of carbon, whereon said crucible rests, and a mass of powdered retort carbon d surrounding said crucible and in electrical contact with said plate, substantially as herein described. 9th. An apparatus for the reduction by electrolysis of refractory oxides for producing metals, or metallic alloys, or compounds, consisting of a carbon crucible a with tap hole g, a plug h, for closing said tap hole, a positive electrode b of carbon, a plate c of carbon, whereon said crucible rests, and a mass of powdered retort carbon d, surrounding said crucible and in electrical contact with said plate, substantially as herein described. 10th. In apparatus for the reduction by electrolysis of refractory oxides for producing metals, or metallic alloys, or compounds, the combination of a crucible a, built up of blocks or bricks of carbon cemented together, a box or container e1, placed in good electrical connection with said crucible by casting it about said crucible and a positive-carbon electrode, substantially as herein described. 11th. An apparatus for the reduction by electrolysis of refractory oxides for producing metals, or metallic alloys, or compounds, the combination of a carbon crucible and a positive electrode, said positive electrode being composed of carbon plates held or clamped together with intervening spaces in each of which metal is cast, or in which carbon is placed, substantially as herein described. 12th. In apparatus for the reduction by electrolysis of refractory oxides for producing metals, or metallic alloys, or compounds, the combination of a carbon crucible with tap-hole g and plug h, a positive electrode b composed of a number of carbon plates, and means for clamping said plates together, substantially as herein described. 13th. In apparatus for the reduction by electrolysis of refractory oxides for producing metals, or metallic alloys, or compounds, the combination of a carbon crucible a with tap-hole g and plug h, a metal box or container e1, said box or container being placed in good electrical connection with said crucible by casting it about said crucible, and a positive carbon electrode, substantially as herein described. 14th. In apparatus for the reduction by electrolysis of refractory oxides for producing metals, or metallic alloys, or compounds, the combina-

tion of a carbon crucible *a* with tap-hole *g* and plug *h*, metal box or container *e* placed in close electrical connection with said crucible by casting it about said crucible, and a positive electrode *b* composed of a number of carbon plates held or clamped together, substantially as herein described. 15th. In apparatus for the reduction by electrolysis of refractory oxides for producing metals, or metallic alloys, or compounds, the combination of a carbon crucible *a* with tap-hole *g* and plug *h*, metal box or container *e* cast about said crucible, a top or cover *n* with openings *m* and *o*, and a positive electrode *b* composed of a number of carbon plates held or clamped together, substantially as herein described for the purposes set forth. 16th. In apparatus for the reduction by electrolysis of refractory oxides for producing metals, or metallic alloys, or compounds, the combination of a carbon crucible *a* with tap-hole *g* and plug *h*, spring *f* for holding said plug in position to close said tap-hole, cover *n*, with openings *m* and *o*, positive electrode *b*, composed of a number of carbon plates clamped or held together, and means for suspending said electrode, a clamp *m* in electrical connection with said positive electrode and with the positive pole of an electric generator, and means, such as a plate *t*, for electrically connecting the said box or container *e* with the negative pole of said electric generator, substantially as herein described for the purposes set forth.

No. 29,034. Burial Casket. (Cercueil.)

Henry Rice, Frank P. Harder and James R. Downor, Castleton, N.Y., U.S., 28th April, 1888; 5 years.

Claim.—1st. A burial casket having a series of slotted openings formed in its bottom, and a movable bottom provided with adjustable supports which correspond in number and position to the said slotted openings, said supports being hinged to the movable bottom so as to swing into and out of said slotted openings, and therein fastened while in their raised position, as and for the purpose herein specified. 2nd. In burial casket, the combination of the body of the casket and its cover connected together by separable hinges, said cover having on its edge that is opposite to the one on which the hinges are secured, hooks which are fitted to engage with the hinge pins, of the parts hinges that are secured to the body of the casket, said hooks being made independently of said hinges, as and for the purpose specified.

No. 29,035. Automatic Water Trap for Gas, Steam or Air Lines. (Trappe d'eau automatique pour tuyaux de gaz, de vapeur et d'air.)

James F. Shay and Hamilton S. Corwin, Toledo, Ohio, U. S., 28th April, 1888; 15 years.

Claim.—1st. An automatic water trap for pipe mains, consisting of

a receptacle connected with the main pipe and having a relief pipe provided with a valve opened or closed by the accumulation of water in the trap, as and for the purpose set forth. 2nd. In an automatic water trap for pipe mains, a water receptacle, a relief pipe in communication therewith, provided with a valve held in closed position until a determinate quantity of water has accumulated, and opened until a determinate quantity has been discharged by means of a float valve, as and for the purpose set forth. 3rd. In an automatic water trap for pipe mains, a receptacle for water of condensation provided with two chambers discharge pipes leading from each chamber, opened or closed by the rise or fall of floats, as and for the purpose set forth. 4th. In an automatic water trap for pipe mains, a receptacle for water provided with relief pipes having valves opened or closed by the rise or fall of floats, consisting of hollow receptacles packed with cork or analogous substance, as and for the purpose set forth.

No. 29,036. Woven Fabric. (Tissu.)

The Hunt Automatic Loom Company (assignee of Robert H. H. Hunt), San Francisco, Cal., U.S., 28th April, 1888; 15 years.

Claim.—1st. A fabric composed of warp threads, selvage threads and filling threads, said filling threads being formed of pieces cut of a length double the width of the fabric to be woven, and being interwoven with the warp and selvage threads, as described, whereby loops and free ends are alternately presented, the selvage threads binding one side of the loop of one filling thread and the free end of the adjoining filling thread, substantially as described. 2nd. In combination, with the body of the woven fabric, a selvage composed of threads running with the warp and of the alternately cut and looped ends of filling threads, substantially as described.

No. 29,037. Sealing Cans or Vessels.

(Scellement des boites ou recipients.)

John Stauffer, Toronto, Ont., 28th April, 1888; 5 years.

Claim.—1st. A receptacle in the interior of the can, at the top, for holding wax which, when in a melted state, the outer ring of the compartment for rubber in the cover will dip below the surface of the wax and will form an air-tight joint, substantially as described. 2nd. A compartment formed on the under face of the cover for a soft gasket or rubber, the inner ring of the wax receptacle to pass up into the said compartment and impinge on the rubber, thereby forming a complete air-tight joint, substantially as described. 3rd. The nipple on the top of the cover surrounding an aperture in the cover and enclosing a loose rubber valve, substantially as described. 4th. The combination, with the can or vessel *A*, the cover *B*, the receptacle *a* and compartment *b*, the flanged cover *c* and bolts *a*₂, with slot *a*₁ and sealing wire *a*₃, the nipple *C* with rubber valve *e* and aperture *c*, arranged and operating substantially as shown and described.

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

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|---|---|
| <p>1091. W. E. WARNER, 3rd 5 years of No. 8,663, from the 24th day of April, 1888. Improvements in Door Hangers for Sliding Doors, 3rd April, 1888.</p> | <p>1104. P. FITZGIBBONS & C. W. FERRIS, 3rd 5 years of No. 8,740, from the 2nd day of May, 1888. Improvements in Steam Boilers, 9th April, 1888.</p> |
| <p>1092. P. FILMAN, 2nd 5 years of No. 16,610, from the 4th day of April, 1888. Improvements on Draft Bolts for Sleighs and Waggon, 3rd April, 1888.</p> | <p>1105. W. J. COOPER, 2nd 5 years of No. 16,697, from the 17th day of April, 1888. Improvements on the Distillation of Coal for Obtaining Products therefrom, 13th April, 1888.</p> |
| <p>1093. L. FRANCIS, 2nd 5 years of No. 16,620, from the 7th day of April, 1888. Improvements on Step Ladder, 4th April, 1888.</p> | <p>1106. THE GUELPH CARRIAGE GOODS COMPANY, 2nd 5 years of No. 16,762 from the 24th day of April, 1888. Improvements on Machines for forming Carriage Axles, 13th April, 1888.</p> |
| <p>1094. J. KELLY, 2nd and 3rd 5 years of No. 16,627, from the 9th day of April, 1888. Improvements on Stop and Waste Cock, 4th April, 1888.</p> | <p>1107. THE WATEROUS ENGINE WORKS COMPANY (assignee), 3rd 5 years of No. 8,783, from the 15th day of May, 1888. Improvement on Brayton, Juono, and Trench's Spark Arrester, 13th May, 1888.</p> |
| <p>1095. H. H. TAYLOR, 2nd 5 years of No. 16,662, from the 12th day of April, 1888. Improvements on Screw Cutting Machines, 4th April, 1888.</p> | <p>1108. M. MAGIN, 2nd 5 years of No. 17,271, from the 13th day of July, 1888. Improvements on Faucets for Beer, Ale and other Liquids, 13th April, 1888.</p> |
| <p>1096. N. RICHARDSON, 2nd 5 years of No. 16,656, from the 16th day of April, 1888. Improvements in Steering Machines, 7th April, 1888.</p> | <p>1109. C. E. TIBBLES, 2nd 5 years of No. 16,740, from the 23rd day of April, 1888. Improvements in Sewing Machines, 20th April, 1888.</p> |
| <p>1097. W. P. JONES, 2nd 5 years of No. 16,710, from the 18th day of April, 1888. Improvements on Land Rollers, 7th April, 1888.</p> | <p>1110. E. V. GARDNER, 2nd 5 years of No. 16,832, from the 11th day of May, 1888. Improvements in the Manufacture of White Lead, and in the Manufacture of Carbonic Acid, Gas, suitable for use in this and other Processes, etc., 23rd April, 1888.</p> |
| <p>1098. A. McDOUGALL, 2nd 5 years of No. 16,808, from the 5th day of May, 1888. Improvements on Tow Boats, 7th April, 1888.</p> | <p>1111. P. STRAITH, 2nd 5 years of No. 16,814, from the 5th day of May, 1888. Improvements on Machines for Sharpening the Knives of Reapers and Mowers, 24th April, 1888.</p> |
| <p>1099. R. JOHNSTON, 2nd 5 years of No. 16,653, from the 12th day of April, 1888. Improvement on Snow Plows, 9th April, 1888.</p> | <p>1112. THE LONDONDERRY STOVE WORKS COMPANY (assignee), 2nd 5 years of No. 8,680, from the 25th day of April, 1888. Improvements in Cooking Stoves, 25th April, 1888.</p> |
| <p>1100. THE RAILWAY SAFETY APPLIANCE COMPANY OF CANADA (assignee), 2nd 5 years of No. 16,756, from the 24th day of April, 1888. Improvements on Railway Switches, 9th April, 1888.</p> | <p>1113. C. M. DOUGLAS, 2nd 5 years of No. 16,810, from the 5th day of May, 1888. Improvements on Folding Canvas Boats, 27th April, 1888.</p> |
| <p>1101. THE OVAL DISH COMPANY (assignee), 2nd 5 years of No. 16,968, from the 18th day of June, 1888. Improvements on Butter Plates, 9th April, 1888.</p> | <p>1114. E. SMART, 3rd 5 years of No. 8,950, from the 25th day of June, 1888. Improvements on Blind Hinges, 30th April, 1888.</p> |
| <p>1102. THE OVAL WOOD DISH COMPANY (assignee), 2nd 5 years of No. 17,310, from the 16th day of July, 1888. Improvements on Machines for Cutting Wooden Plates, 9th April, 1888.</p> | |
| <p>1103. THE RAILWAY SAFETY APPLIANCE COMPANY OF CANADA (assignee), 2nd 5 years of No. 17,596, from the 6th day of September, 1888. Improvements on Switch Stands, 9th April, 1888.</p> | |

APRIL LIST OF TRADE MARKS.

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

3126. ANTOINE GAILLETON, Officier de la Legion d'Honneur, Maire de Lyon, et President de la Commission de Surveillance et de Contrôle de la Marque Municipale pour les soieries tissées à Lyon, (Rhône), Franco. Soieries. 3 Avril, 1888.
3127. JOHN CORBETT, of Stoko Prior Salt Works, near Bromsgrove, Worcestorshire, also trading as WESTON & WESTALL, of 115 Lower Thames Street, London, England. Salt. 3rd April, 1888.
3128. JOHN CORBETT, of Stoko Prior Salt Works, near Bromsgrove, Worcestorshire, also trading as WESTON & WESTALL, of 115 Lower Thames Street, London, England. Salt. 3rd April, 1888.
3129. S. DAVIS & SONS, of Montreal, Quo. Cigars and Cigarettes. 3rd April, 1888.
3130. THOMAS HOPE CHURCHILL, and THOMAS MILBURN, both of Toronto, Ontario. Dry Hop Yeast and Baking Powder. 11th April, 1888.
3131. THE SCOTCH OATS ESSENCE COMPANY, No. 160, Fulton Street, New York, U.S.A. Patent Medicine, known as "Scotch Oats Essence." 11th April, 1888.
3132. JAMES MATTHEWS, of Toronto, Ontario. Aerated Waters. 14th April, 1888.
3133. JOHN B. GOODE, of Montreal, Quebec. Cutlery, such as Razors, Knives, Scissors, etc. 16th April, 1888.
3134. VAN DULKEN, WEILAND & CIE., de Rotterdam, Hollande, Genievre. 17 Avril, 1888.
3135. BURNS & ARMSTRONG, of Toronto, Ontario. Aerated Waters. 17th April, 1888.
3136. LYMAN BROWN, of New York, U.S.A. Medicinal tinctures, extracts and fluid preparations. 18th April, 1888.
3137. LYMAN BROWN, of New York, U.S.A. Ointments. 18th April, 1888.
3138. LYMAN BROWN, of New York, U.S.A. Pills. 18th April, 1888.
3139. DANIEL BANVILLE, de la Paroisse de St. Jérôme de Matane, Comté de Rimouski, Quebec. Sirop Pectoral. 20 Avril, 1888.
3140. ARTHUR GUINNESS, SON & COMPANY, Limited, of 18 Birchin Lane, London, England, Beer. 20th April, 1888.
3141. N. MATHIESON & CO., of Widnes, Lancashire, England. Chemical substances, used for Agricultural, Horticultural, Veterinary, and Sanitary purposes. 20th April, 1888.
3142. MRS. D RITCHIE, widow of David Ritchie, of Montreal, Quebec. Cigarettes, Tobaccos and Cigars. 23rd April, 1888.
3143. WM. S. KIMBALL & COMPANY, of Rochester, New York, U.S.A. Tobacco in all forms. 23rd April, 1888.
3144. PENNINGTON, RUNK & CO., of Montreal, Quebec. Cigars. 24th April, 1888.
3145. LOUIS SIMPSON, Manager of the Nova Scotia Cotton Manufacturing Company, Limited, of Halifax, Nova Scotia. Cotton Warp Yarns. 25th April, 1888.
3146. T. A. DUCHARME, & CIE., de Montreal, Quebec. Substance à polir les poêles et tuyaux de poêles. (Stove Polish.) 25 Avril, 1888.
3147. SAMUEL PERRIN, of Lindsay, County of Victoria, Ontario. Perrin's Pine Tar Cordial. 30th April, 1888.

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4221. NOTICE BIOGRAPHIQUE SUR L'ABBE EDOUARD BONNEAU (Brochure). M. l'Abbé Thomas Grégoire Rouleau, Ptre., Quebec. 5 Avril, 1888.
4222. KING OR KNAVE? by R. E. Francillon (book). The National Publishing Company, Toronto. 9th April, 1888.
4223. A COLLECTION OF ORIGINAL ACROSTICS ON LADIES' CHRISTIAN NAMES (book). George J. Howson, Morrisburg, Ont. 10th April, 1888.
4224. A VISIT TO THE SPRING ON THE HILLSIDE; OR THE TEMPERANCE QUESTION, by R. T. K. (Pamphlet) The Morning Herald Printing and Publishing Co., Halifax, 11th April, 1888.
4225. THE CERTIFICATE OF BIRTH ANNOUNCEMENT }
 4226. do. do. MARRIAGE do. } (Prints)
 4227. do. do. DEATH do. }
 The Mail Printing Company, Toronto, 12th April, 1888.
4228. ALL IN A GARDEN FAIR. Song. Written and composed by Michael Watson. The Anglo-Canadian Music Publishers' Association, Limited, London, England, 12th April, 1888.
4229. THE GOODWIN SANDS. Song. Words by F. E. Weatherly. Music by Stephen Adams. The Anglo-Canadian Music Publishers' Association (Ld.), London, England, 12th April, 1888.
4230. REMEMBER. Song. Words by Cecil Lorraine. Music by Jacques Blumenthal. The Anglo-Canadian Music Publishers' Association (Ld), London, England, 12th April, 1888.
4231. THOU ART SLEEPING. Song. Words by Arthur Chapman. Music by Ivan Caryll. The Anglo-Canadian Music Publishers' Association (Ld.), London, England, 13th April, 1888.
4232. DAPHNE. Waltz. By May Ostlere. The Anglo-Canadian Music Publishers' Association (Ld.) London, England, 13th April, 1888.
4233. RECIPE FOR MAKING "KERNELINA," A VEGETABLE MILK. Fredk Kirkby, Richmond Hill, Ont., 17th April, 1888.
4234. YEAR INVESTMENT POLICY. Thomas Merritt, Toronto, 18th April, 1888.
4235. SARA CREWE and EDITHA'S BURGLAR. by Frances Hodgson Burnett (book). William Bryce, Toronto, 18th April, 1888.
4236. A REAL GOOD THING. by Mrs. Edward Kennard (book). The National Publishing Company, Toronto, 21st April, 1888.
4237. THE WRONG ROAD: BY HOOK OR CROOK. By Major Arthur Griffiths (book). The National Publishing Company, Toronto, 21st April, 1888.
4238. I SEEK FOR THEE IN EVERY FLOWER. Ballad. Words by Frederick Enoch. Music by Wilhelm Ganz, Sydney Ashdown, Toronto, 23rd April, 1888.
4239. INSURANCE PLANS OF OTTAWA AND VICINITY. Chas. Edward Goad, Montreal, 25th April, 1888.
4240. EIN TAG IN DER SCHWEIZ (A day in Switzerland). By Gustav Lange (Musical composition). Sydney Ashdown, Toronto, 26th April, 1888.
4241. QUI VIVE? Duet for Tenor and Baritone, from "The Old Guard." Words by H. B. Farnie. Music by Robert Planquette. The Anglo-Canadian Music Publishers' Association (Ld.), London, England, 26th April, 1888.
4242. DOROTHY LANCERS, for the Pianoforte, on melodies from Alfred Cellier's Comedy Opera. Arranged by E. Corlett, specially adapted for Saratoga, and Bombay Lancers. The Anglo-Canadian Music Publishers Association (Ld), London, England, 26th April, 1888.
4243. A CYCLOPEDIA OF CANADIAN BIOGRAPHY. Series II. Edited by George Maclean Rose. Hunter, Rose & Co., Toronto, 26th April, 1888.
4244. CHRIS. By W. E. Norris (book). The National Publishing Company, Toronto, 26th April, 1888.
4245. THE WINGS OF THE DOVE. Vocal Duet. Words by Mrs. Homans. Music by Michael Watson, Sydney Ashdown, Toronto, 30th April, 1888.
4246. THE CANADIAN MUSIC COURSE. BOOK II. By Alexander T. Cringan. The Canada Publishing Company (Limited), Toronto, 30th April, 1888.

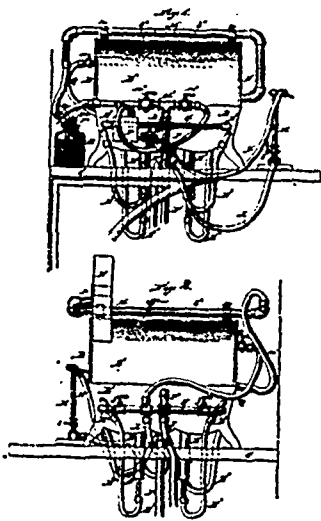
THE
CANADIAN PATENT OFFICE RECORD.

ILLUSTRATIONS.

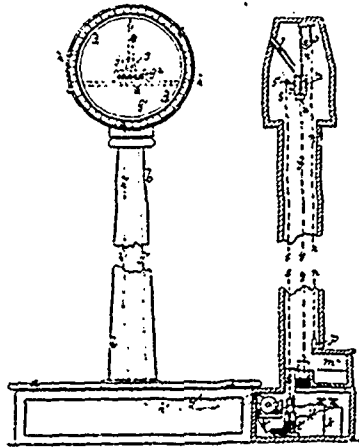
Vol. XVI.

APRIL, 1888.

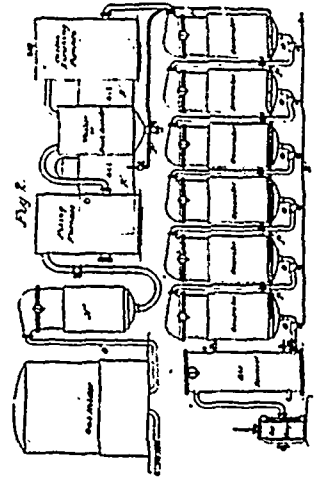
No. 4.



28785 Land's Hydrocarbon Furnace.



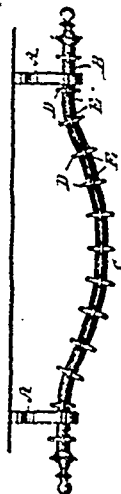
28786 Lynde's Apparatus for Indicating Static or Dynamic Force.



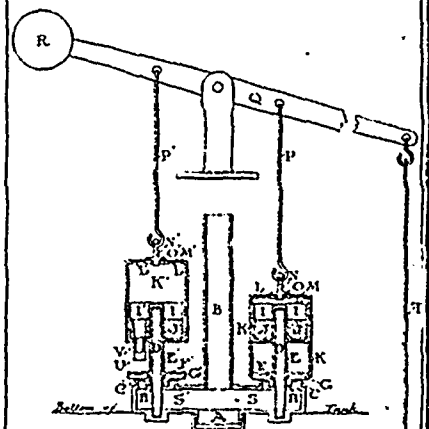
28787 Johnston's Gas Apparatus.



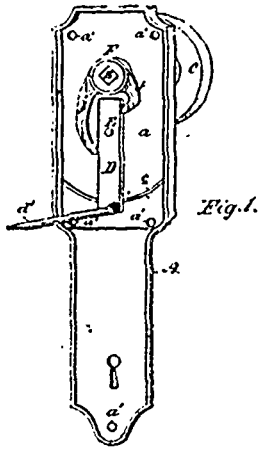
28788 Brown's Puzzle.



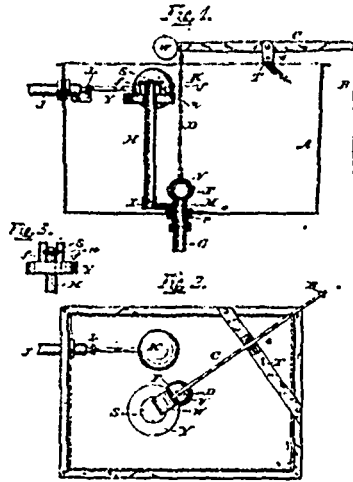
28789 Ramsdell's Curtain Pole.



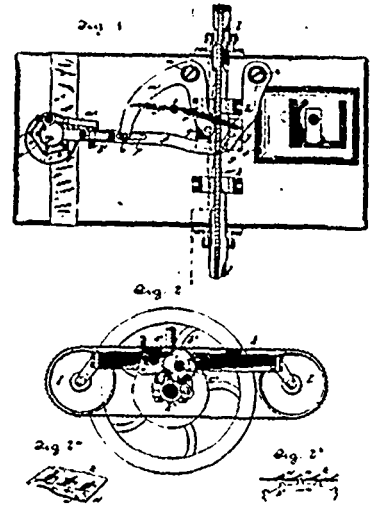
28790 Campbell's Flush Valve.



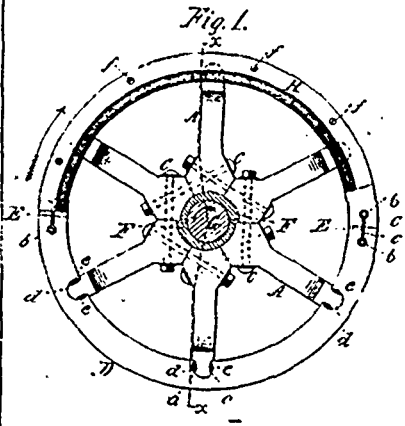
28791 Underwood's Knob Latch Furniture.



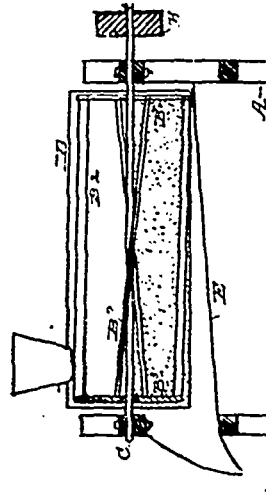
28792 Douglas' Flushing Tank.



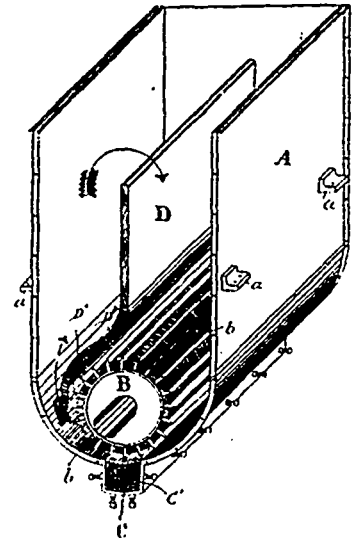
28793 Keith's Sewing Machines.



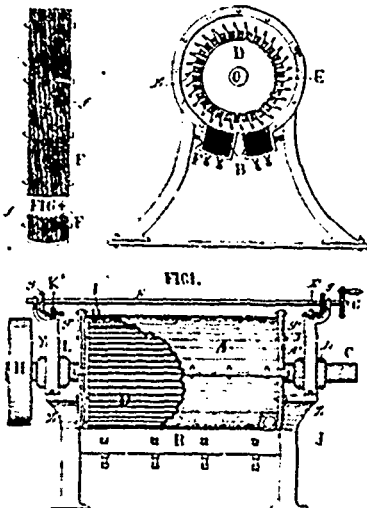
28794 Gilbert's Pulley.



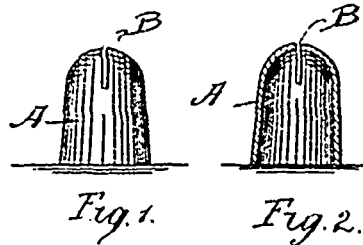
28795 DeCew & Carpenter's Machine for Separating Rinds, etc.



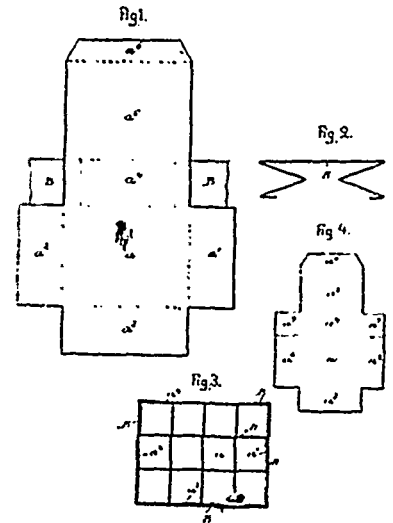
28796 Norton's Pulp Beating Engine.



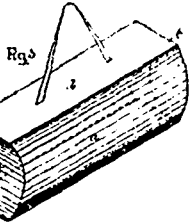
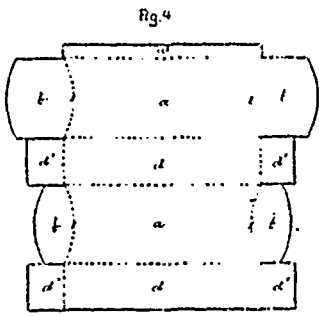
28797 Norton's Mechanism for the Treatment of Paper Fibre.



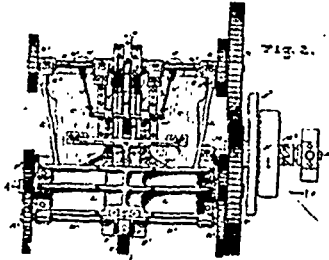
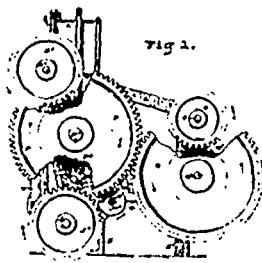
28798 Carcy's Gas Tip.



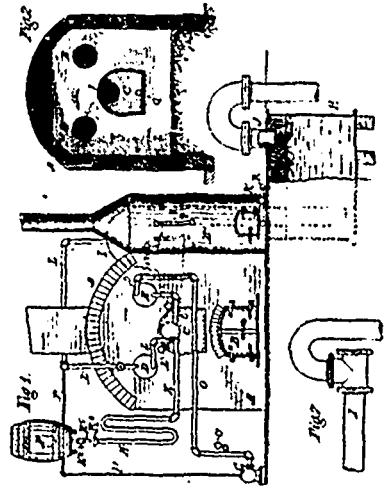
28799 Elliott's Folding Box.



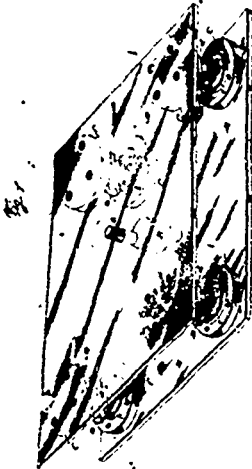
28800 Elliott's Box.



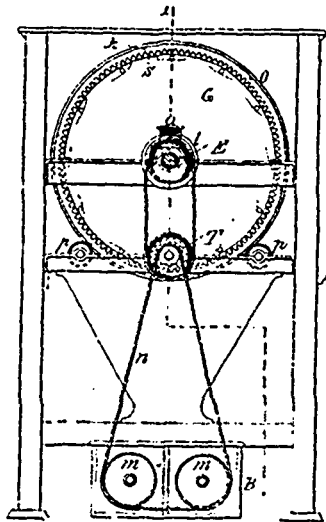
28801 Russell's Machine for Making Metal Timber Hangers.



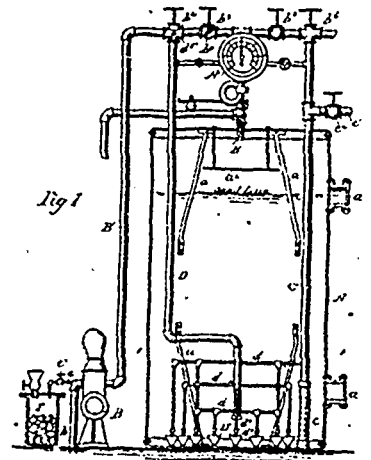
28802 Stewart's Gas Apparatus.



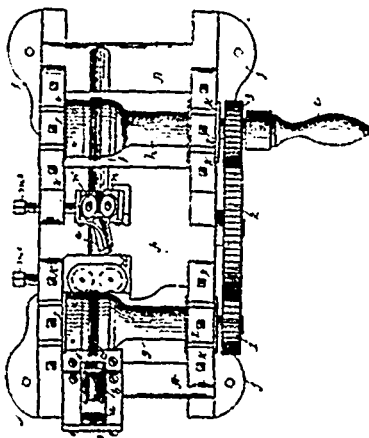
28803 Cox & Salmon's Mechanical Movement.



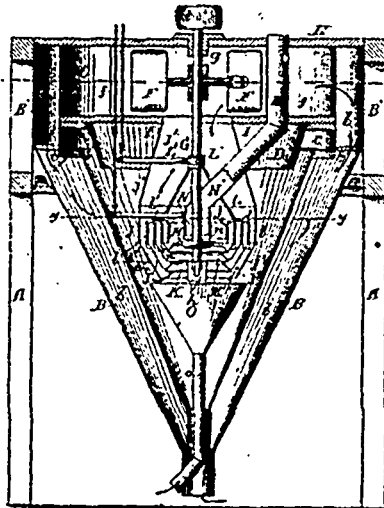
28804 Gilbert's Flour Bolt.



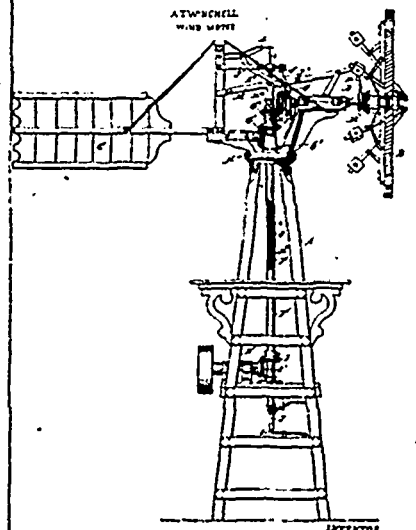
28805 Jewell's Apparatus for Purifying and Filtering Water.



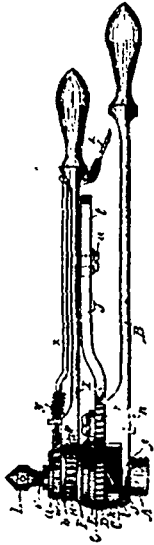
28806 Poyton's Machinery for Making Weather Strips.



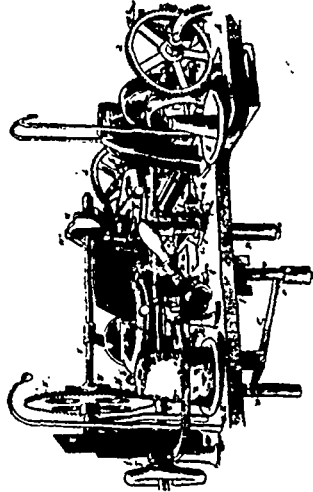
28807 Holt's Separating Machine.



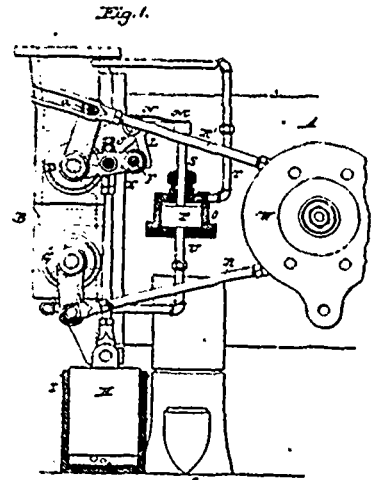
28808 Winchell's Wind Motor.



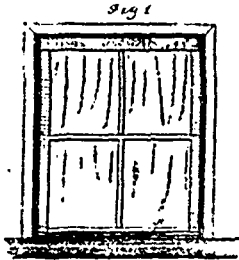
28810 Wilmoth's Ratchet Drill Stock.



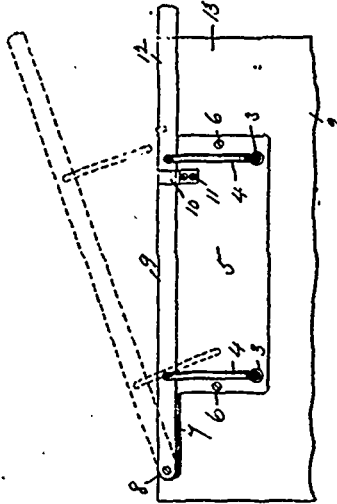
28811 Kerr's Bag, etc.



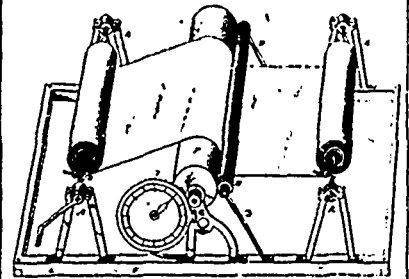
28812 Reynolds' Valve Mechanism, etc.



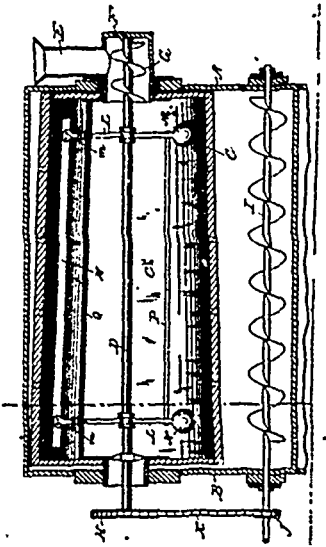
28813 Poyten's Weather Strip.



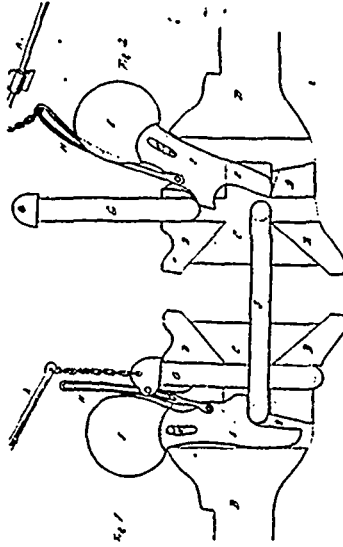
28814 Chappell's Letter and Bill File.



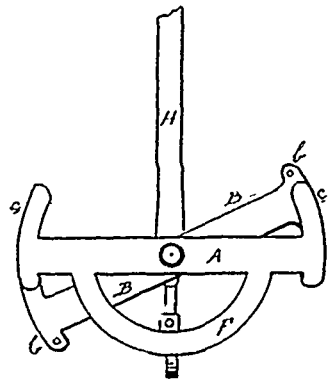
28815 Dalo's Measuring Machine.



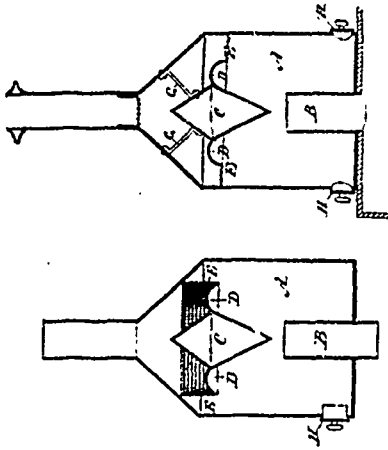
28816 Hurford's Reel Bolt, etc



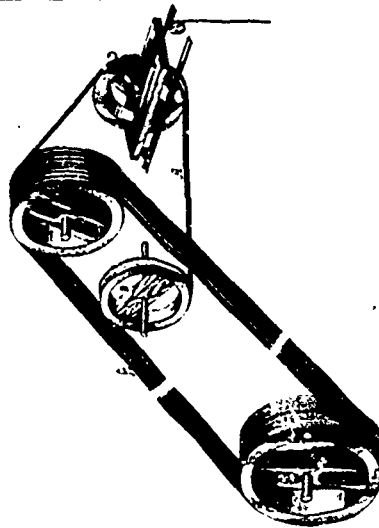
28817 Chisholm's Car Coupling.



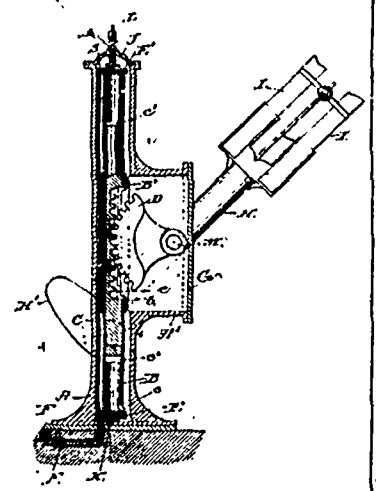
28818 Woods' Carriage Circle.



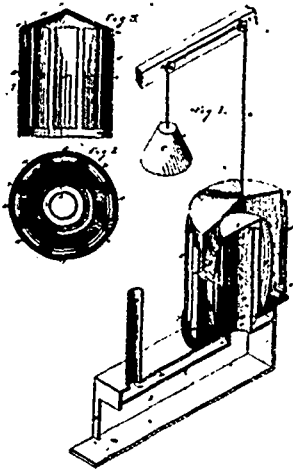
28819 Ussery's Spark Arrester.



28820 Dodge's Device for Transmitting Power.



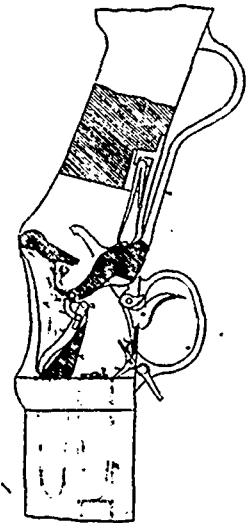
28821 Lidback's Railway Gate.



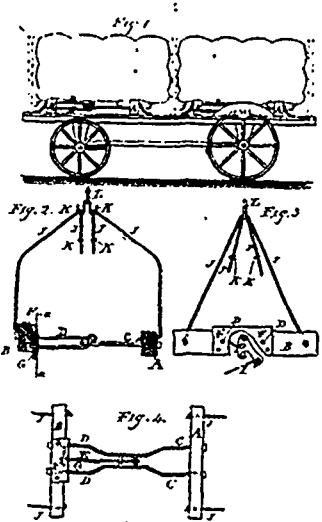
28822 Hime's Barrel Heater.



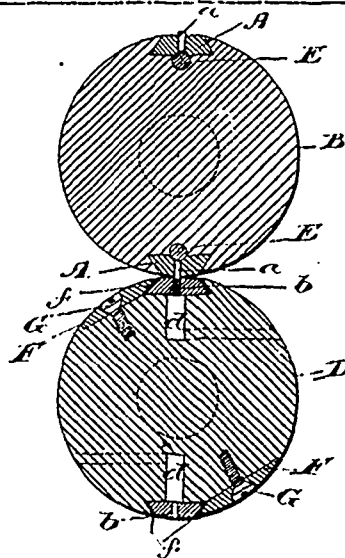
28823 Martin & Harris' Car Coupling.



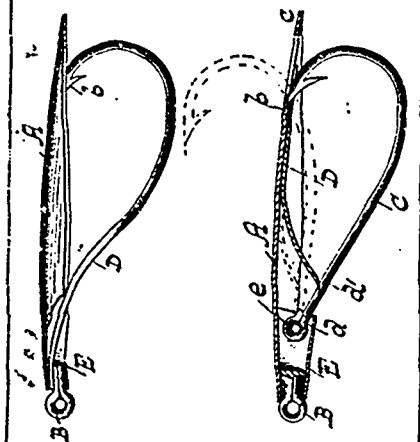
28824 Harston's Fire-Arm, etc.



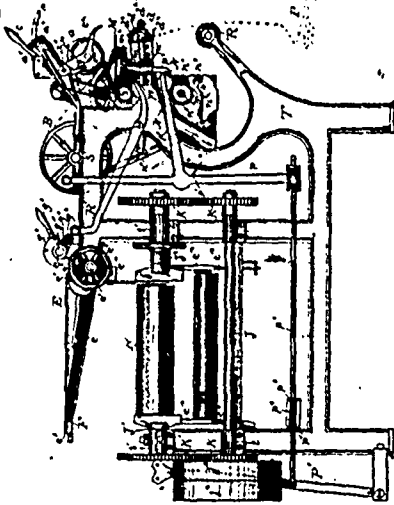
28825 Hart's Hay Sling.



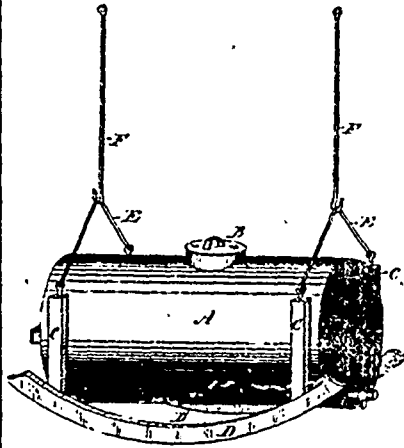
28826 Bouvier's Paper Perforator



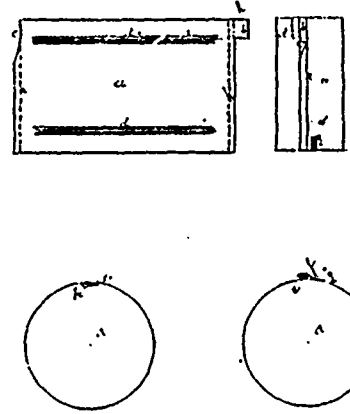
28827 Harlow's Trolling Spoon Bait.



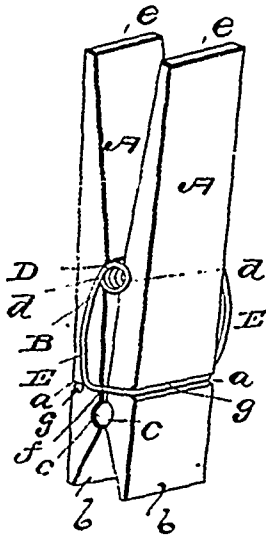
28828 Watson's Machine for Measuring, etc., Fabrics.



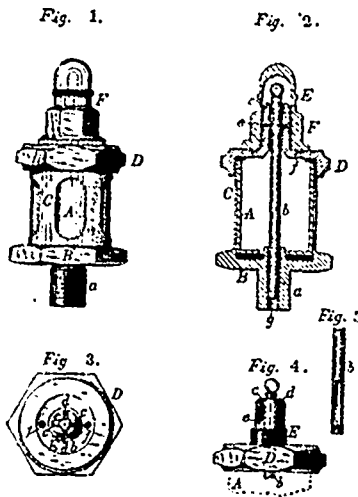
28830 Logan's Washing Machine.



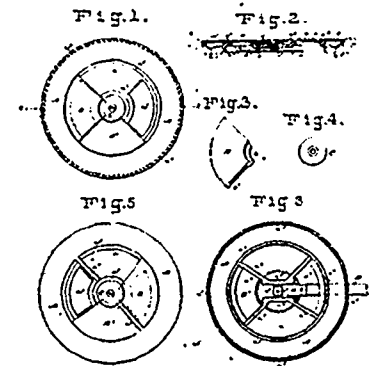
28831 Brousseau's Method of Making Stove-Pipes.



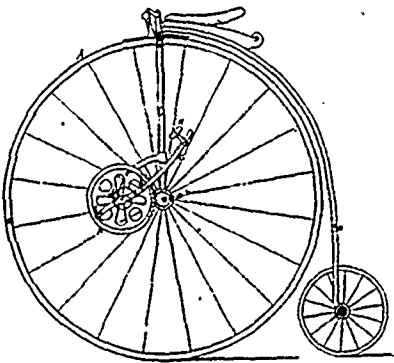
28832 Moore's Clothes Pin.



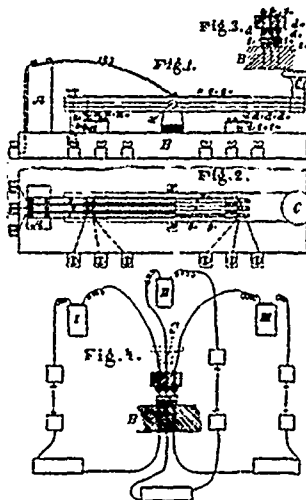
28833 Shaffer's Oil Cup.



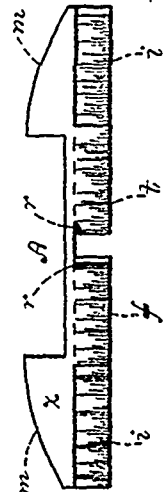
28834 Baker's Stove Pipe Cover.



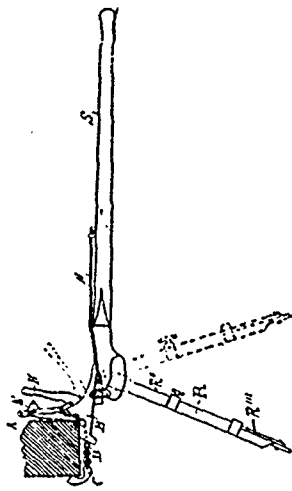
28835 Bourk's Cycle and Velocipede.



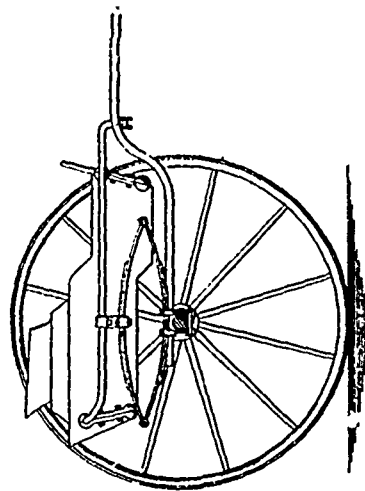
28836 Kunhardt's Morse Key.



28837 Currier's Wear Plate for Railways.



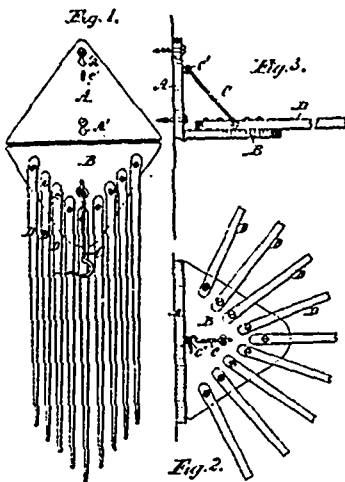
28338 Glifford's Car Mover.



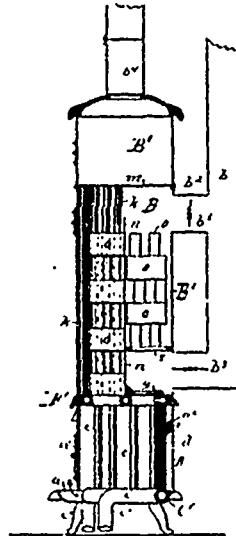
28939 Bown's Two-Wheeled Vehicle.



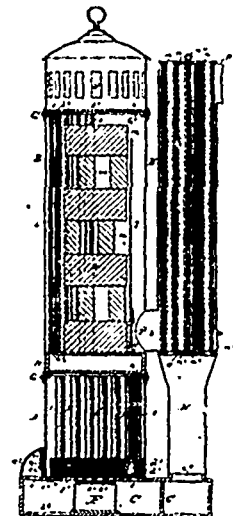
28840 Prindle & Koyl's Bicycle Lantern.



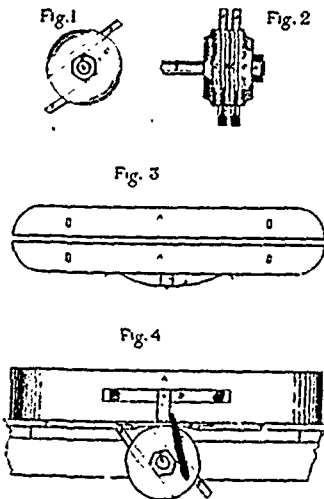
28341 Read's Clothes Rack



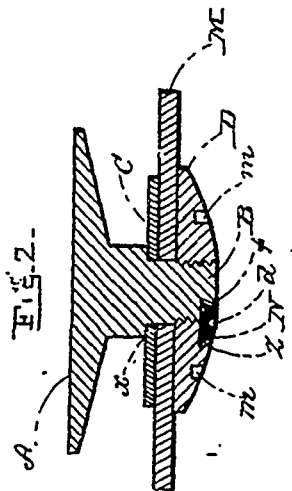
28842 Tilden's Heating Stove.



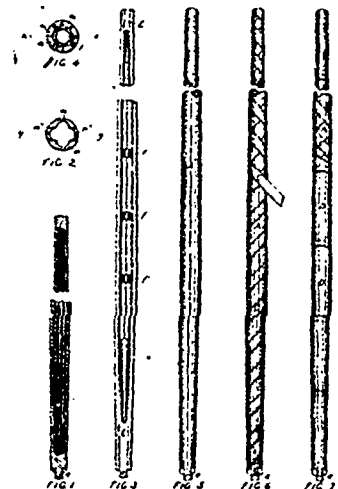
28843 Tilden's Heating Stove.



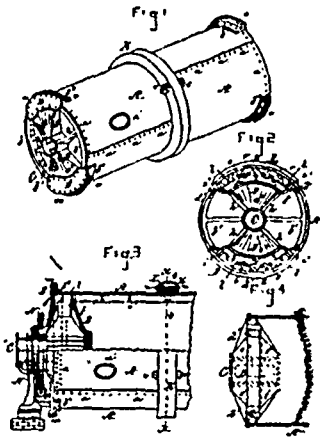
28544 Dickson's Machine for Raising Panels for Doors, etc.



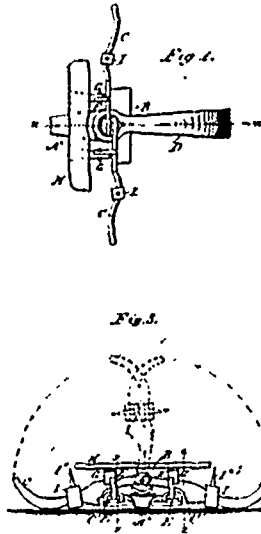
28845 Leckie's Button.



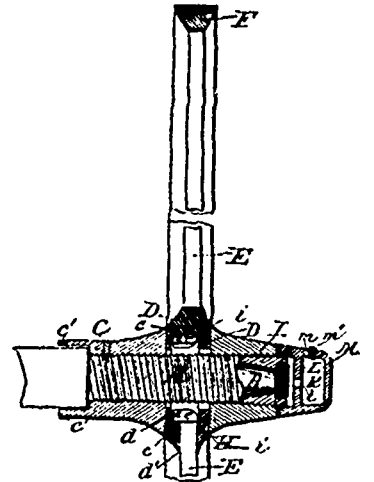
28846 Mansfield's Hollow Mast



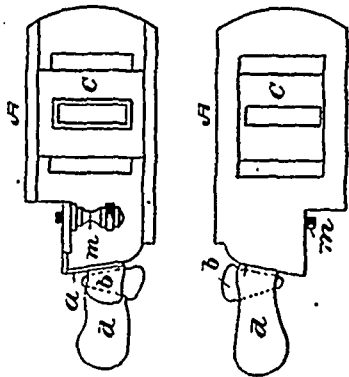
28847 Crocker's Filtering Machine.



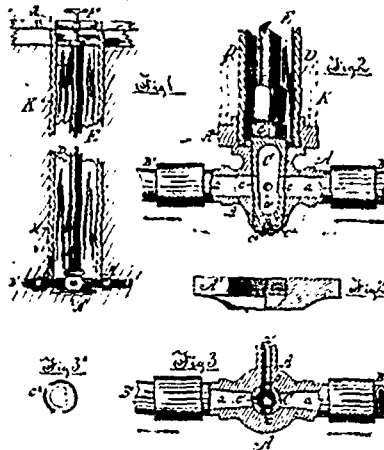
28848 Alexander's Animal Trap.



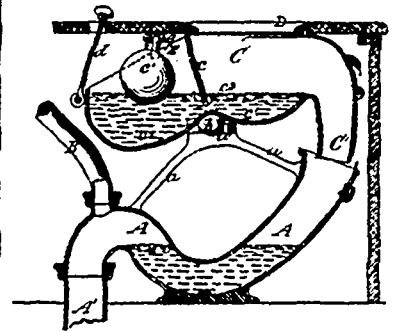
28849 Seale & Downing's Vehicle Wheel.



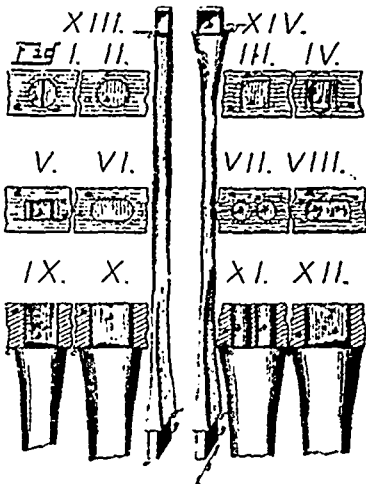
28851 Ganss' Seam Finisher for Sewing Machines.



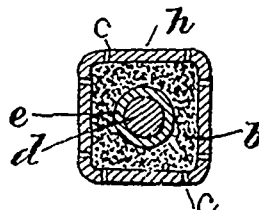
28852 Moses' Device for Operating Street Water Cocks.



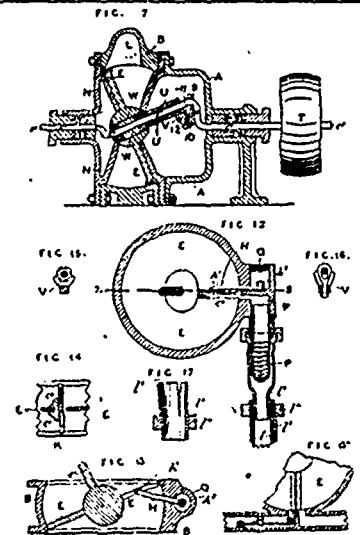
28853 Hubert's Water Closet.



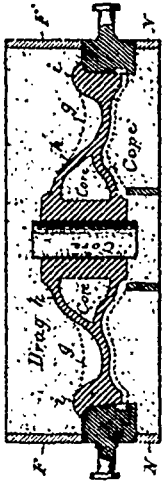
28854 Forbee's Carriage Wheel.



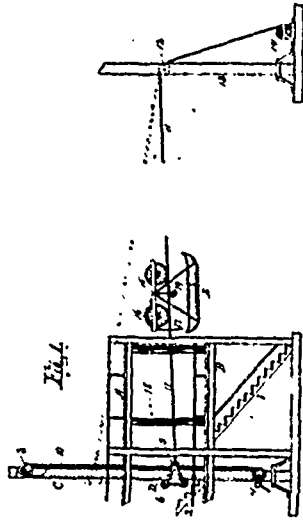
28855 Van Gestel's Secondary Electric Battery.



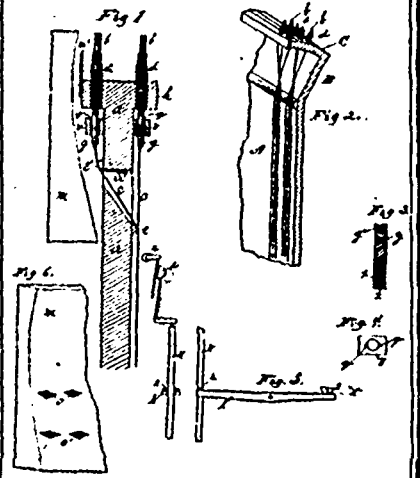
28856 Davies' Gas and Water Meter.



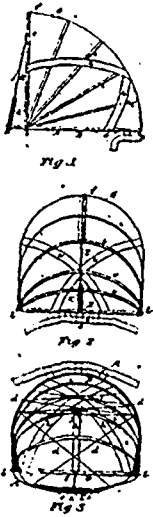
28337 Carr's Method of Moulding Car Wheels.



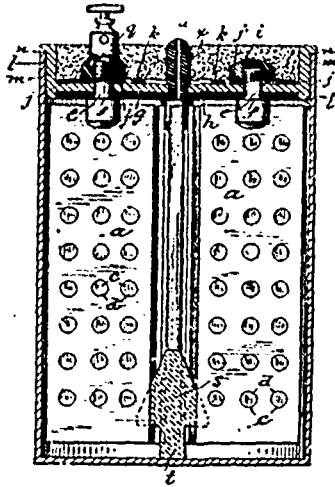
28558 Van Zandt's Cable Coaster, etc.



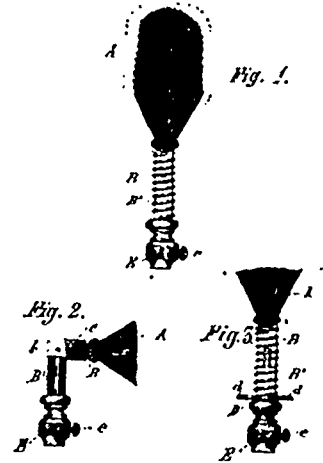
28833 Nickerson's Pianoforte.



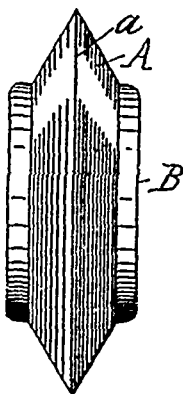
28850 Campbell's Bustle.



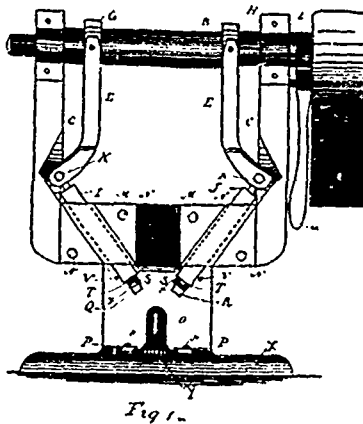
28861 Flick's Secondary Battery.



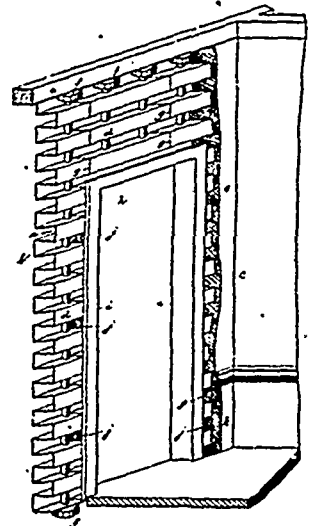
28862 Jackson's Piume.



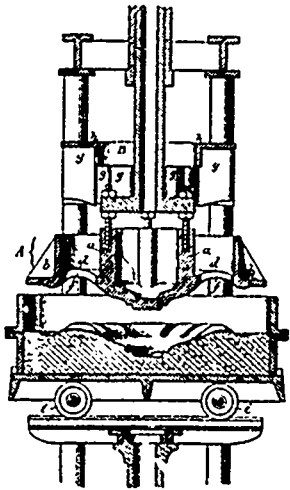
28853 Friend's Rubber Eraser.



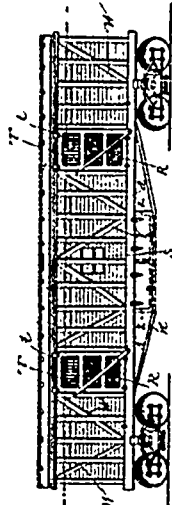
28864 Carey's Punching Machine.



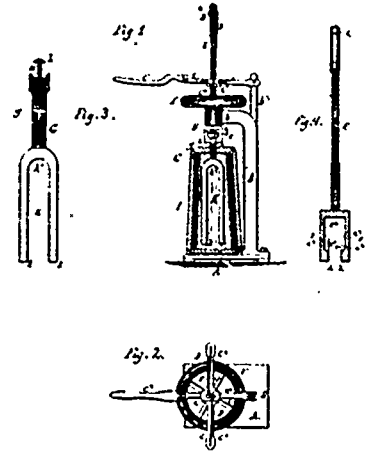
28865 Bailey's Fire Proof Partition.



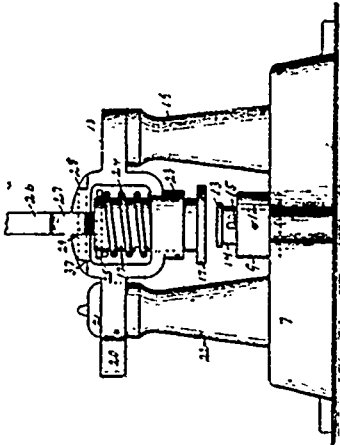
28365 Carr's Pattern for Moulding.



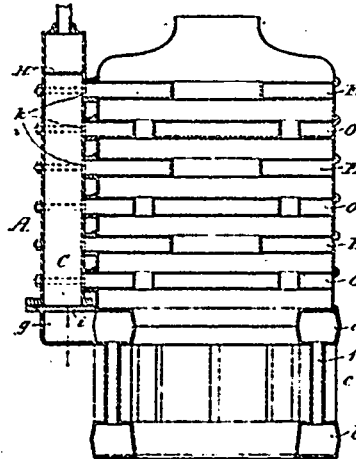
28867 Burton's Stock Car.



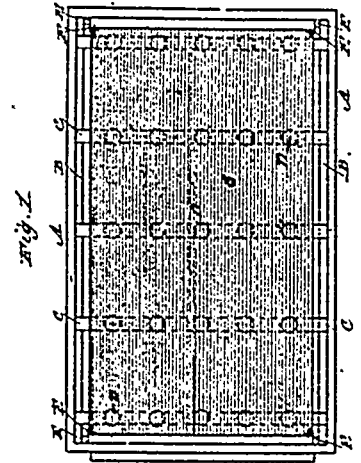
28868 Catching's Churn.



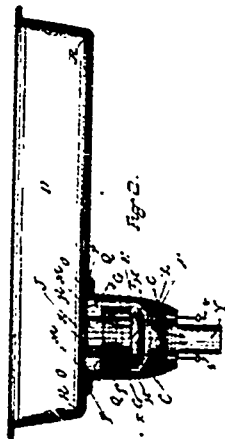
28364 Schott's Button Making Machine.



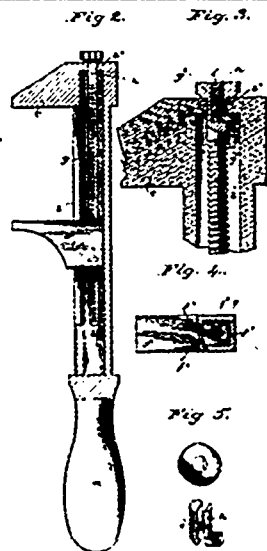
28870 Spence's Water Heater.



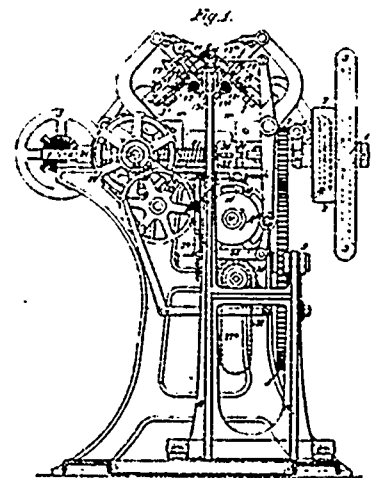
28871 Smith & Livingston's Spring Bed Bottom.



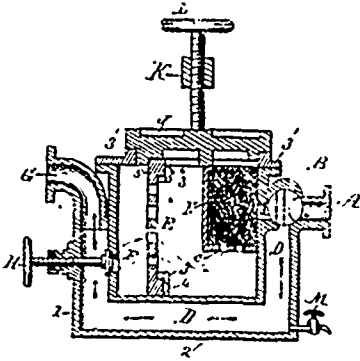
28872 Cold's Trap for Sinks.



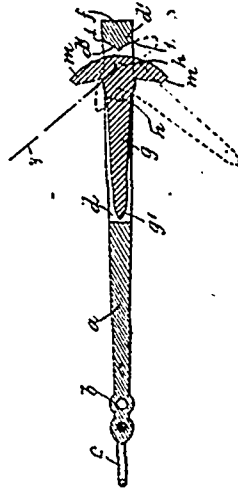
28873 Gato's Monkey Wrench



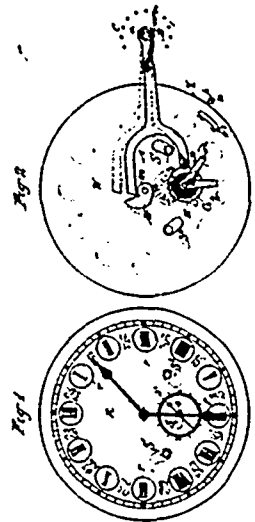
28874 Beyer's Knitting Machine.



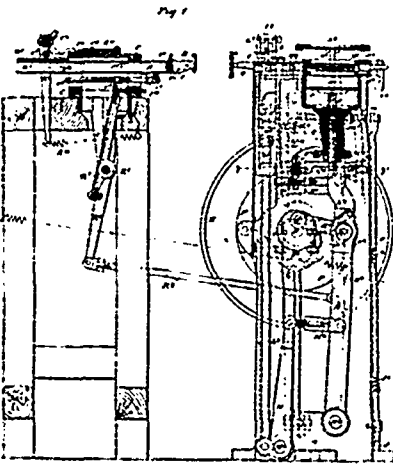
28875 Nelson's Oil Trap.



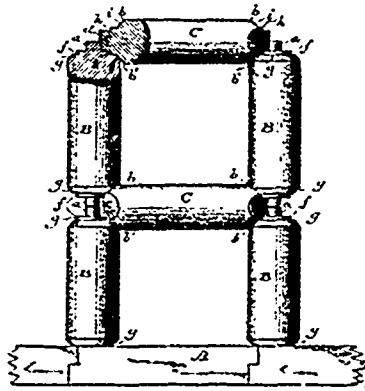
28876 Golder's Anchor.



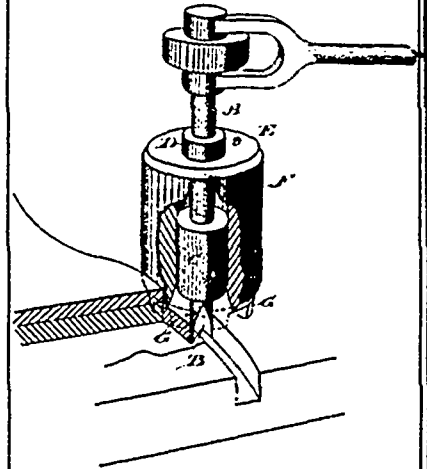
28877 Gage's Clock and Watch.



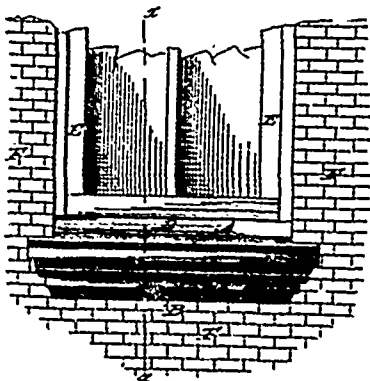
28878 Gano's Apparatus for Inserting and Fixing the Bristles of Brushes, etc.



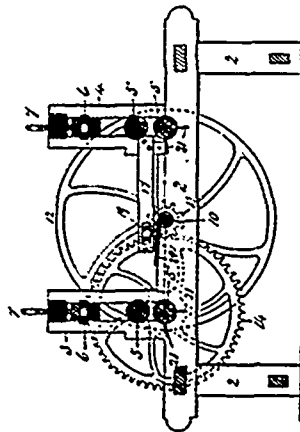
28879 Goodhue's Timber Structure for Mines



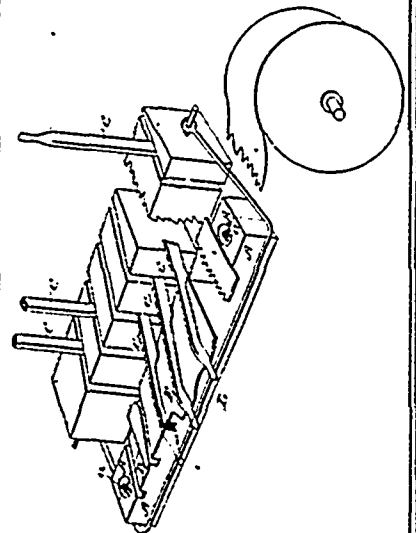
28880 Wood's Routing or Dadoing Tool.



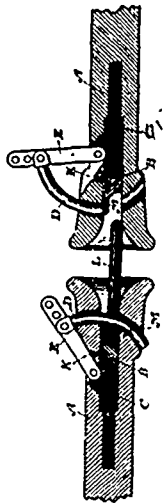
28881 Breuer's Window Sill.



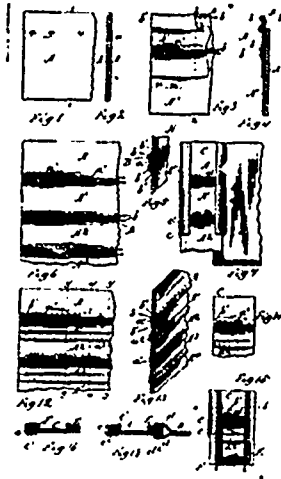
28882 Armstrong's Painting Machine



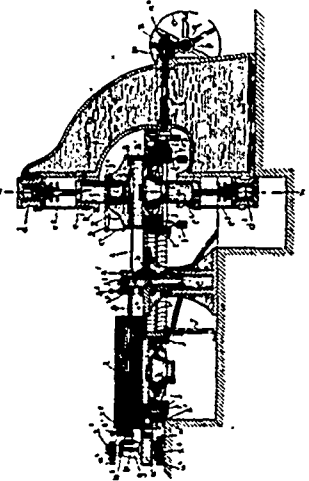
28883 Ripson's Machine for Covering Articles with Cloth, etc



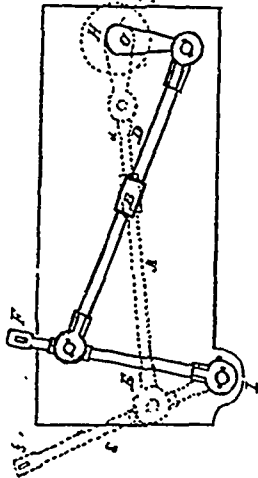
28884 McNab's Car Coupler.



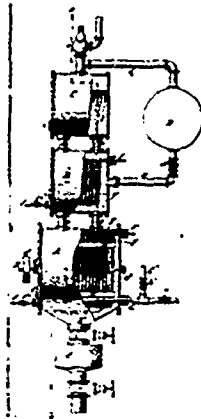
28885 Stone's Method of Making Button Hole Strip.



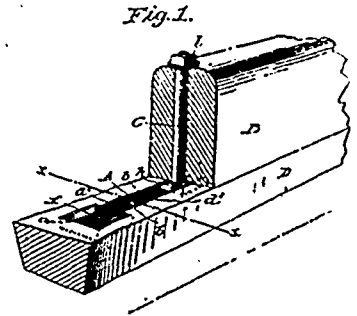
28365 Guntz's Sand Moulding Machine.



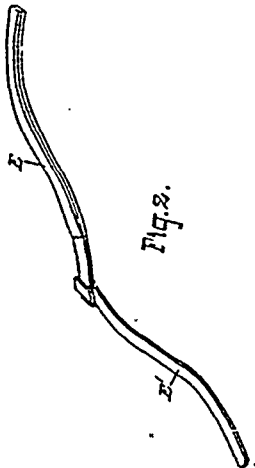
26987 Lloyd's Shingle Feeding Gear.



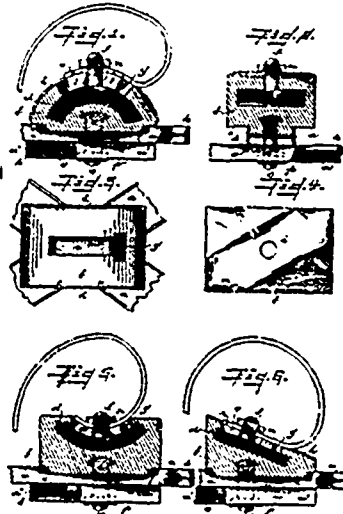
28988 Wood's Apparatus for Manufacturing Mono-Carbonate of Soda, etc.



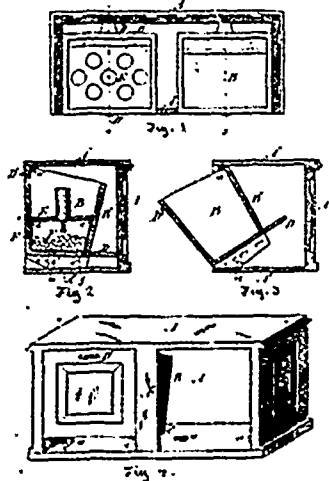
28809 Steven's Shoe for Sleigh Runners.



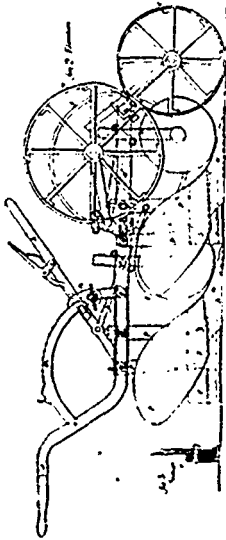
28890 Knapton's Road Cart.



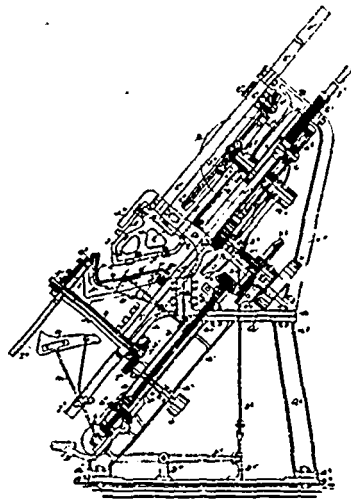
28891 Bailey's Harrow.



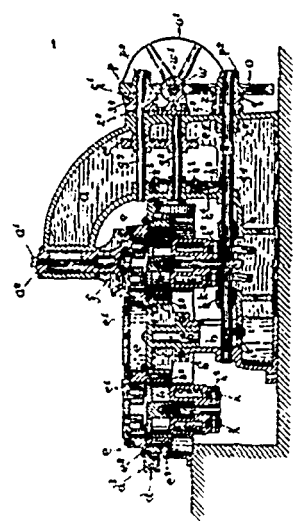
28897 Duchéno's Drawer for Counters, etc.



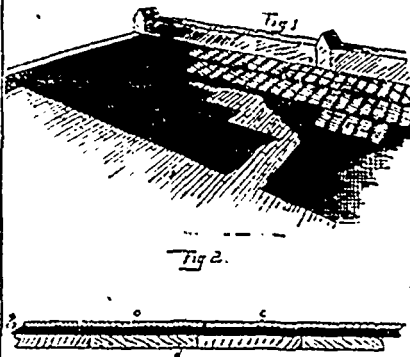
28893 Pratt's Plough.



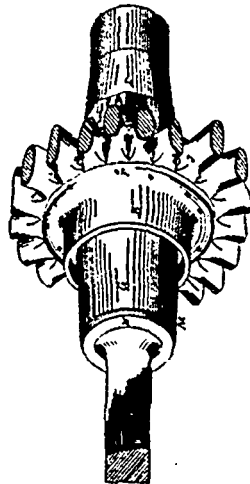
28894 Marshall's Leather Crimping Machine.



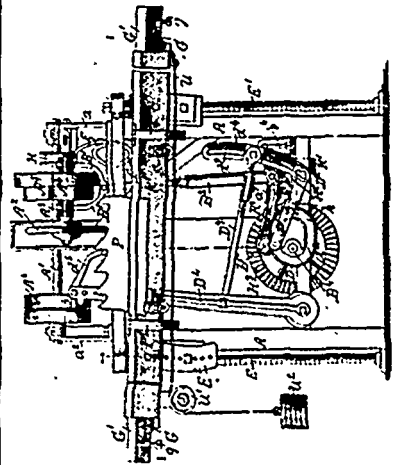
28895 Guntz's Moulding Machine.



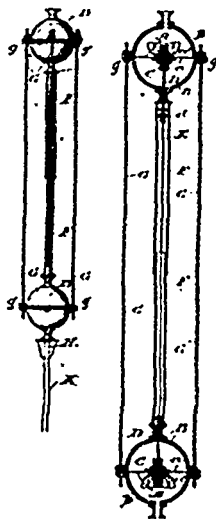
28896 French's Roofing.



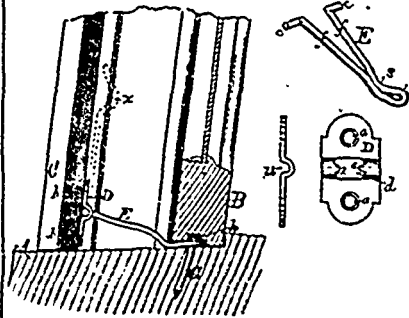
28897 Moulton's Vehicle Hub and Axle.



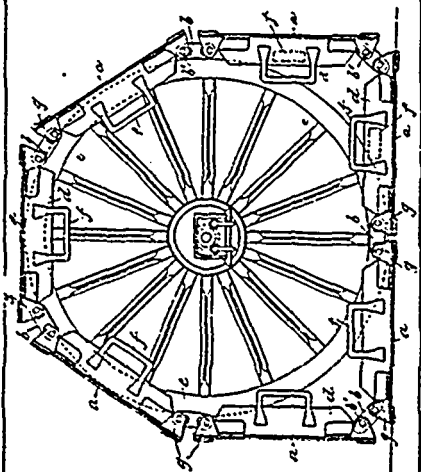
28898 Covell's Saw-Sharpening Machine.



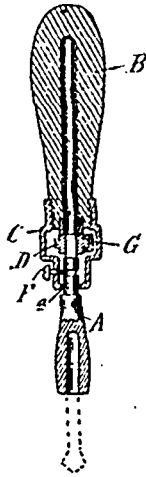
28899 Houlgrave's Water Leakage Detector.



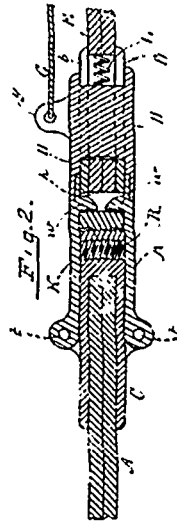
28900 Chase's Blind Stop.



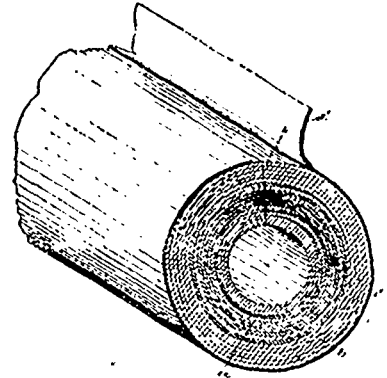
28901 Tipping's Plateway for Vehicles, etc.



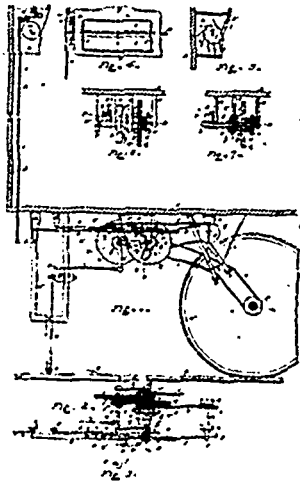
28902 Franke's Bow Drill.



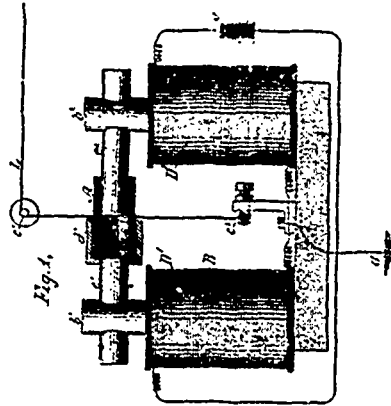
28903 Teakle's Horse Detacher.



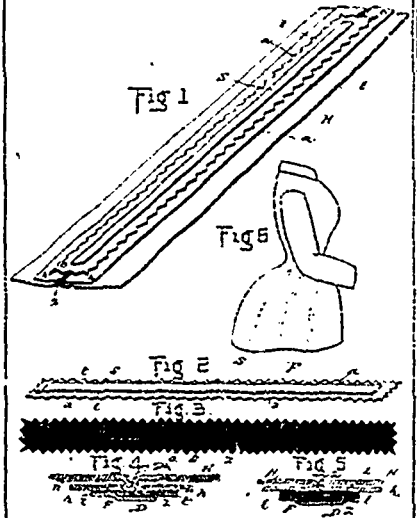
28904 Small's Pipe Covering.



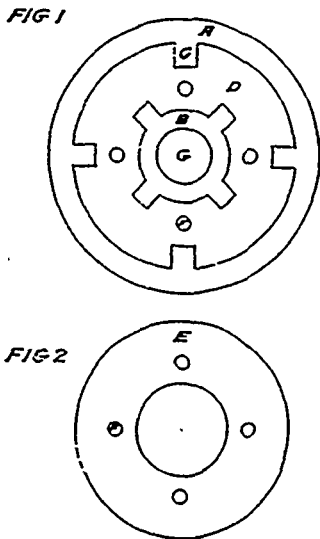
28905 Munroe's Railway Station Indicator.



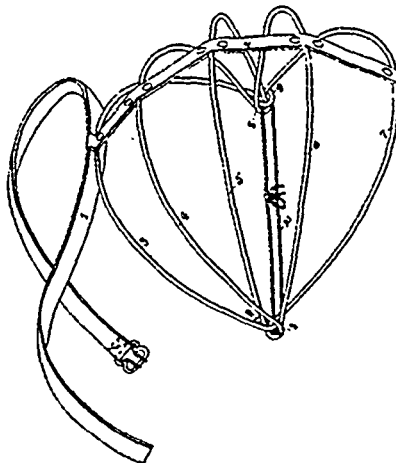
28906 Burke's Telegraphic Instrument.



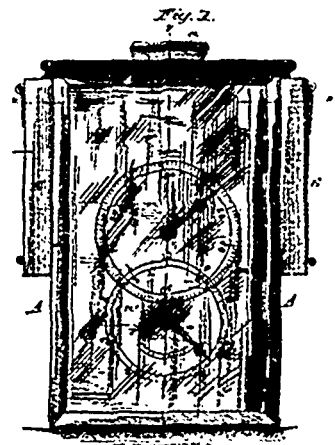
28907 Wheeler's Garment Stay.



28908 McMaugh's Friction Gearing.



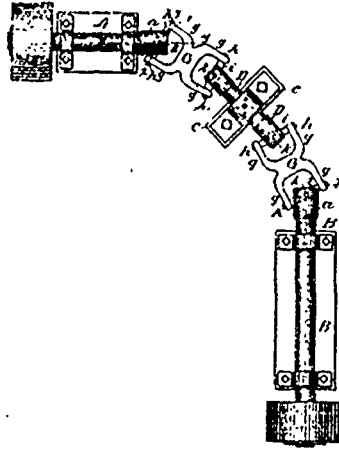
28909 Williamson's Bustle.



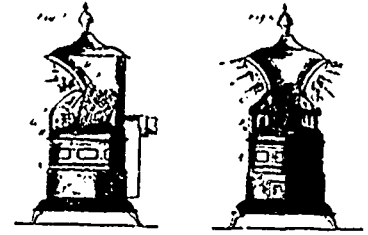
28910 Reynolds' Grain Weigher.



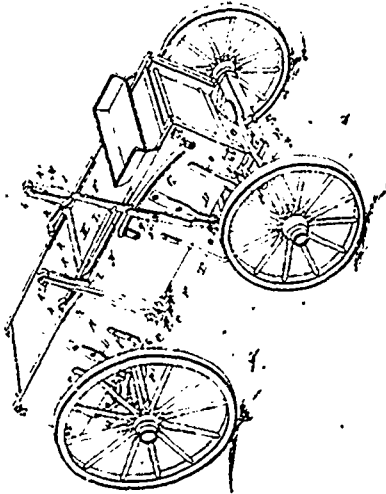
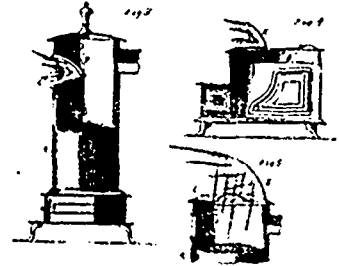
28911 Keith's Car Coupling.



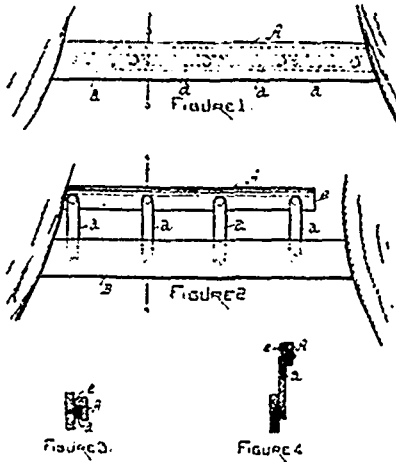
28912 Robes' Shaft Coupling.



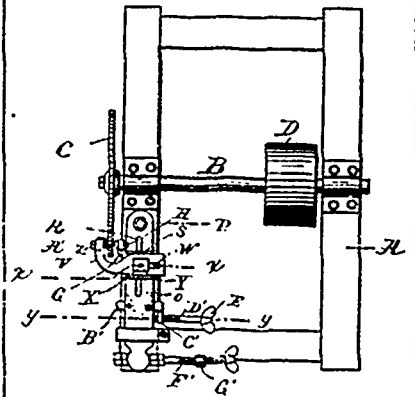
28913 Keep's Stove.



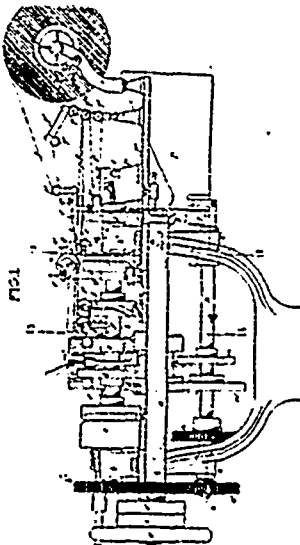
28914 Roger & Hatten's Dumping Waggon.



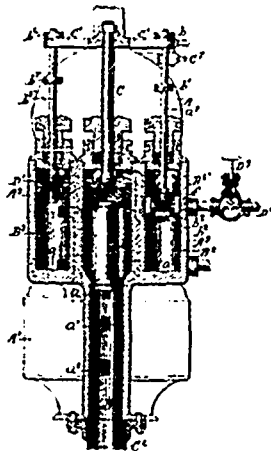
28915 Smith's Guard for Ship Berths, etc.



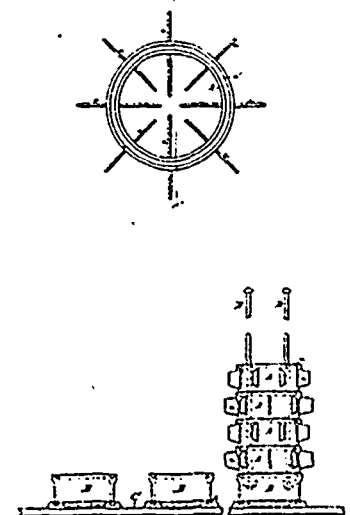
28916 Marshall's Guide for Circular Saws.



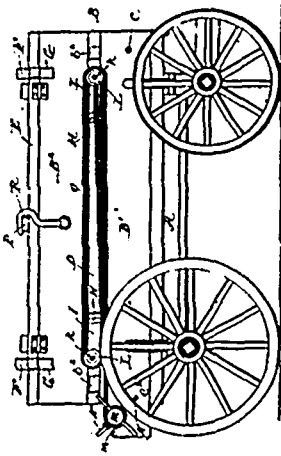
28917 Decouffé's Machine for Making Cigarettes.



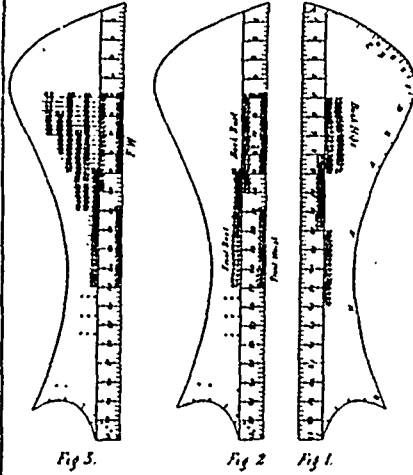
28918 Covell's Feed Water Apparatus.



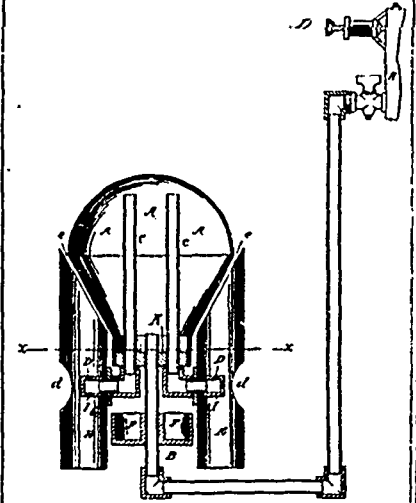
28919 Tilden's Heating Tube.



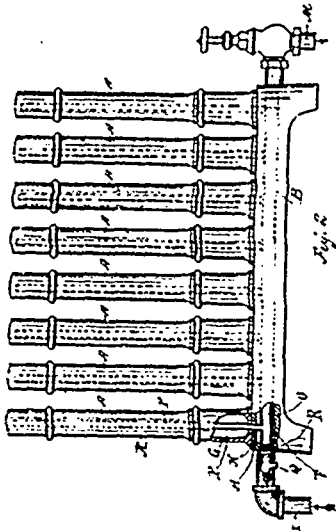
28920 Plato's Hay Press.



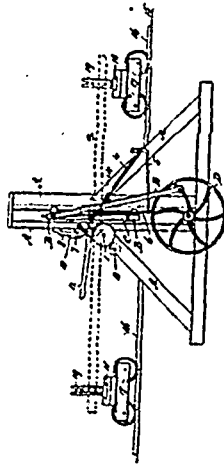
28921 Caron's Dress Pattern Ruler.



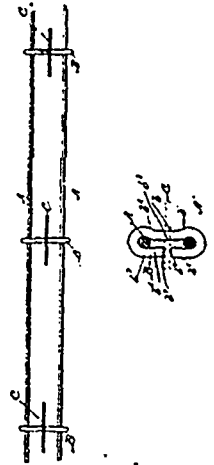
28922 Bussey's Apparatus for Vaporizing and Burning Hydro-Carbons.



28923 Manny's Hot Water Radiator.



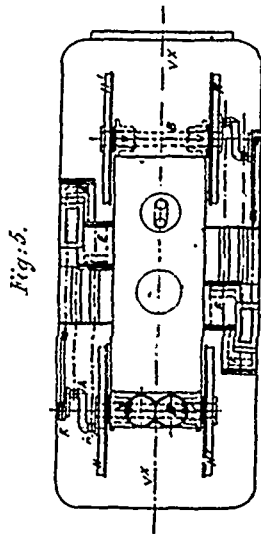
28924 Archibald's Fence Rail Sawing Machine.



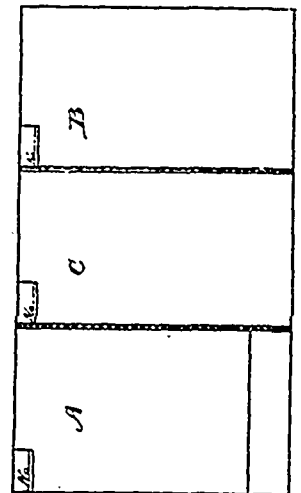
28925 Hodgo's Barbed Fence.



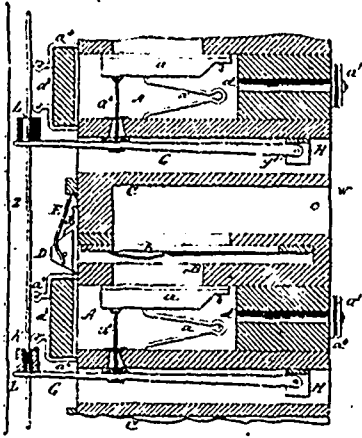
28926 Pearson's Whiffletree.



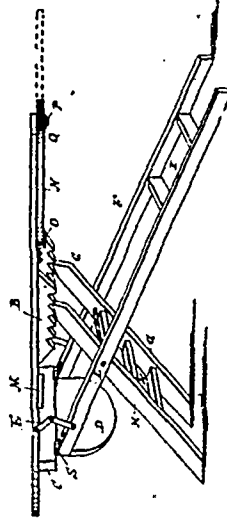
28927 Crampton's Locomotive Engine, etc.



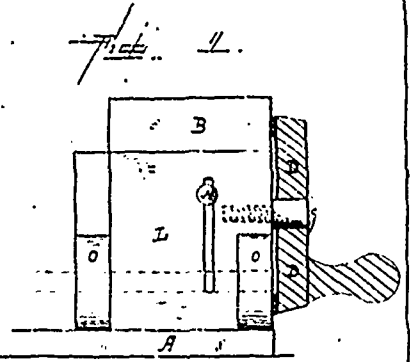
28928 Leo's Insurance Policy.



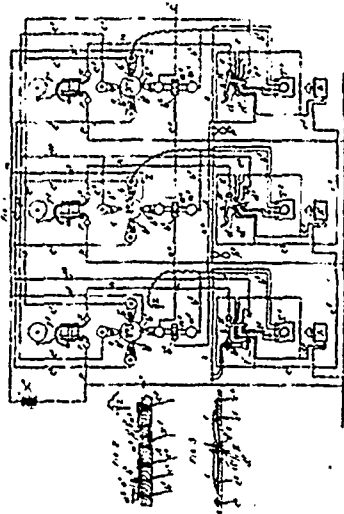
28929 Warren's Reed Organ.



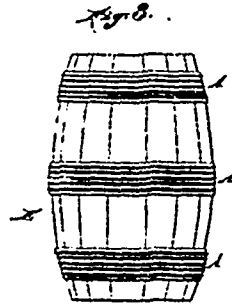
28930 Connett's Ironing Board, etc.



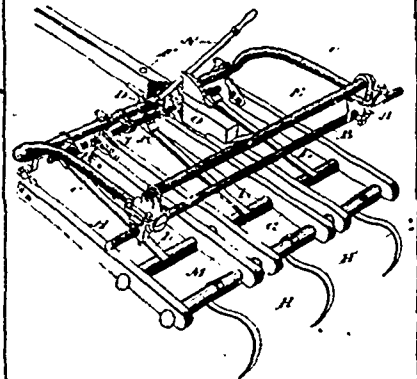
28931 Gold's Machine for Trimming the Ends of Billiard Cues.



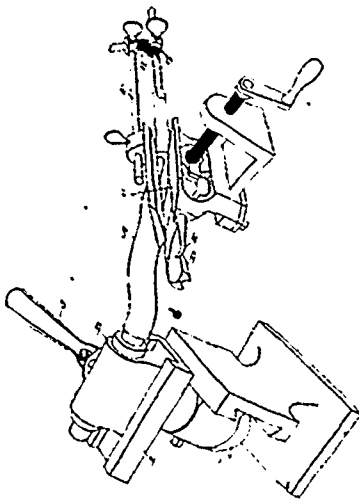
28932 Brown's Telephone System.



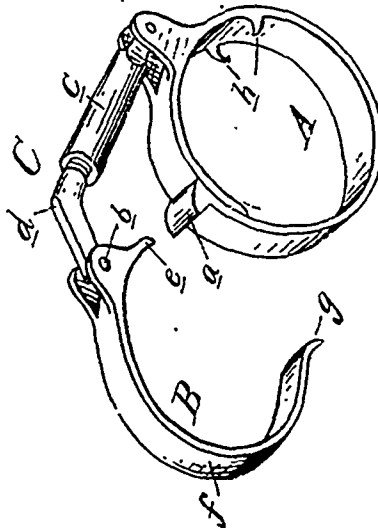
28933 Mattullath's Barrel and Barrel Hoop.



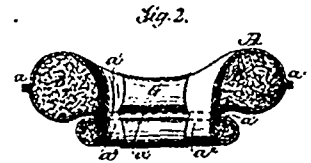
28934 Wisner's Spring Tooth Harrow.



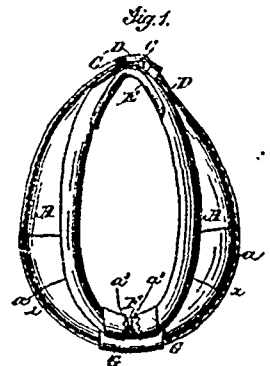
28935 Cameron's Twist Drill Holder.

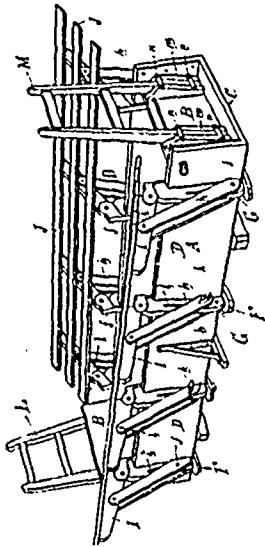


28936 Hecox's Hose Clamp.

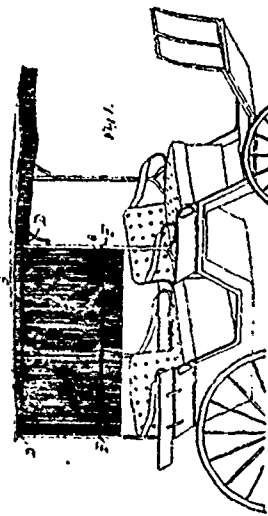


28937 Campbell's Horse Collar.

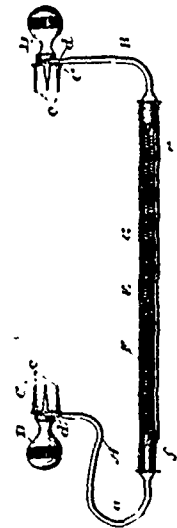




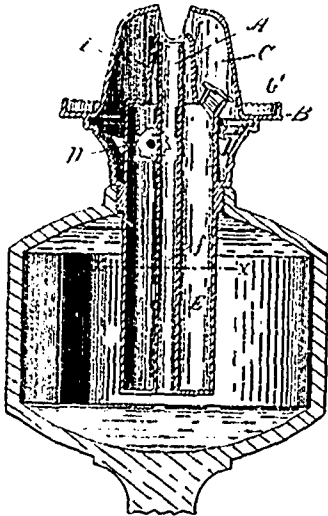
28938 Caldwell's Waggon Rack.



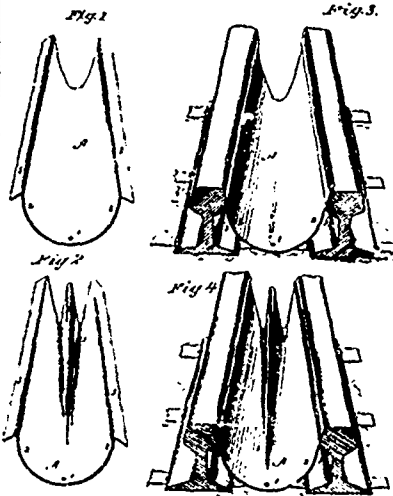
28939 Brandenburg's Carriage Curtain.



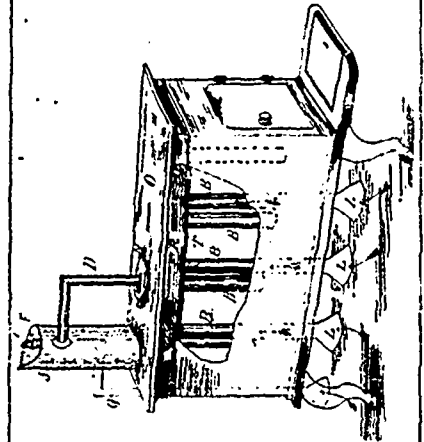
28940 Fotherstonhaugh's Corn Cob Holder.



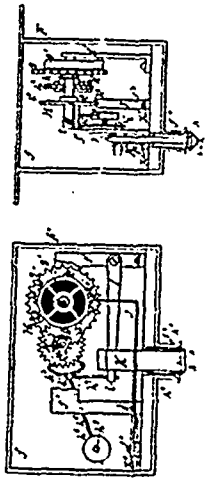
28941 Davidson & Taylor's Safety Lamp.



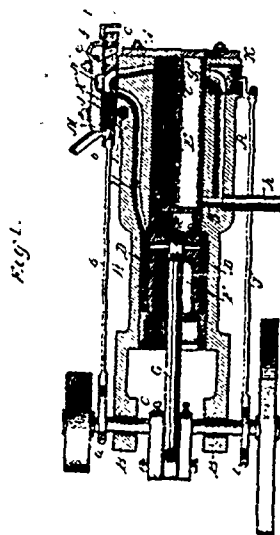
28942 Edwards' Foot Guard for Rail Frogs, etc.



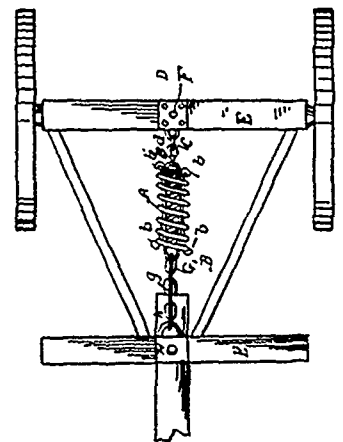
28943 Harning's Heating Stove, etc.



28944 Tiffany & DeMier's Electric Train Signal Apparatus.



28945 Cornell's Gas Engine.



28945 Cunningham's Carriage Tongue Support.

Fig. 1.

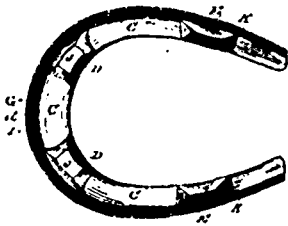


Fig. 2.

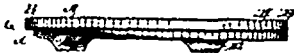
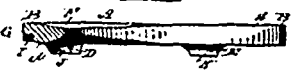
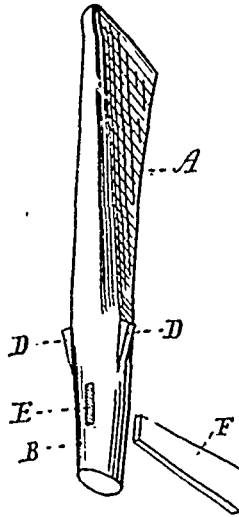


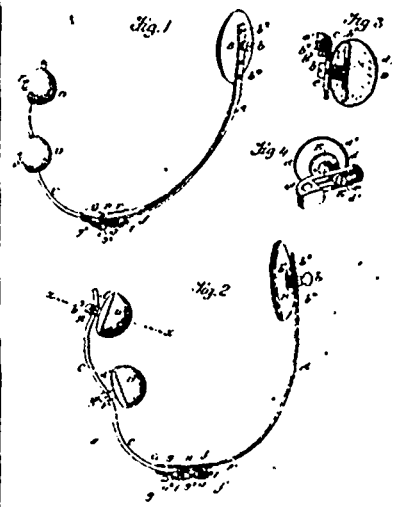
Fig. 3.



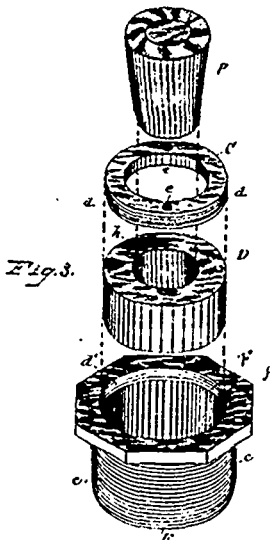
28947 Billings' Horse Shoe.



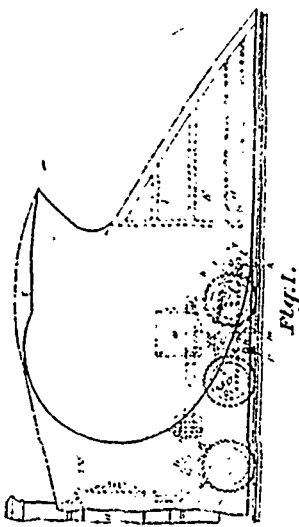
28948 Beam's Threshing Machine Tooth.



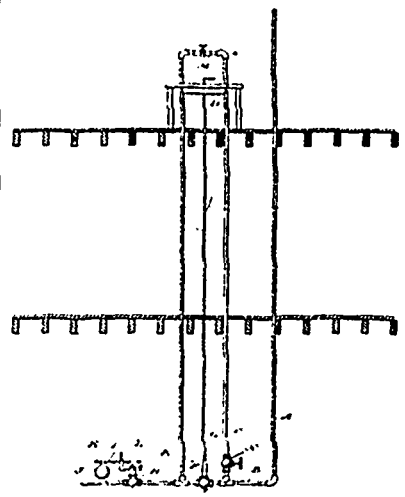
28949 Wilkinson's Truss.



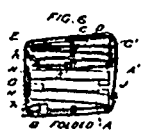
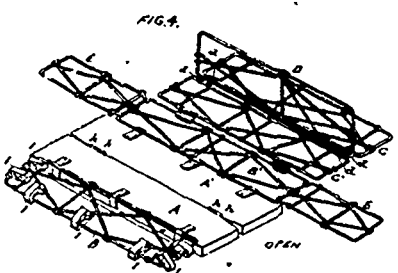
28950 Eisenhuth's Bushing for Bung Holes.



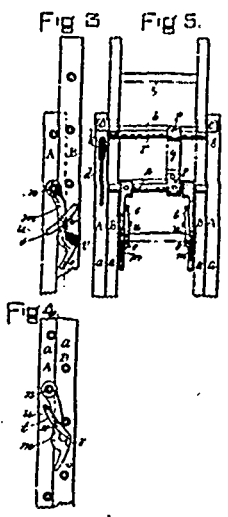
28951 Eaton's Snow Plough.



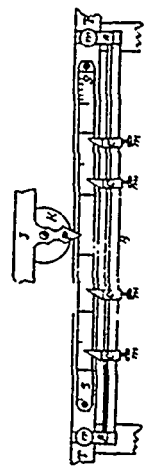
28952 Russell's System of Water Supply.



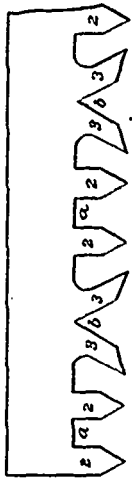
28953 Tatro's Folding Coop.



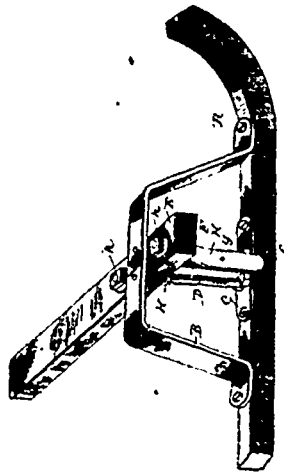
28954 Crafts' Extension Ladder.



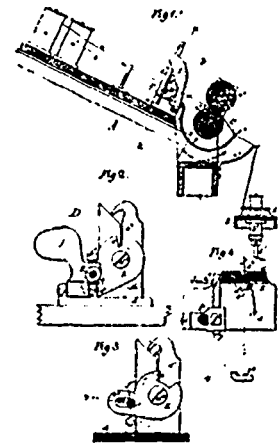
28955 Hanchett's Type Writing Machine.



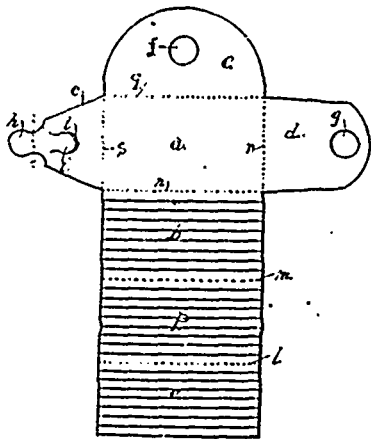
28956 Jacobus' Cross-Cut Saw.



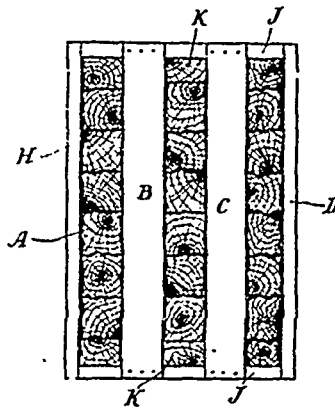
28957 King's Sleigh Knee.



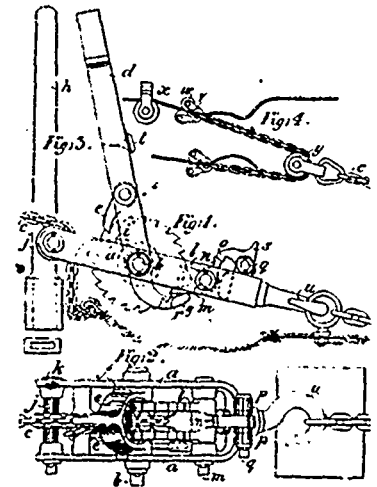
28958 Sanford's Stop Motion for Spinning Machines, etc.



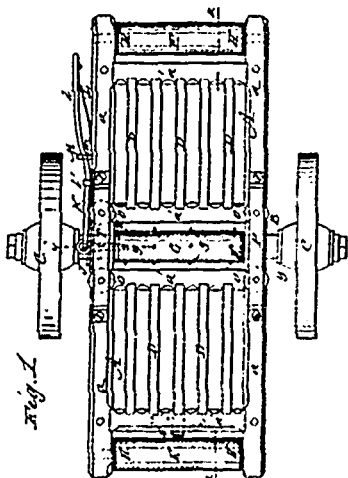
28959 Lefavre's Letter Sheet and Envelope.



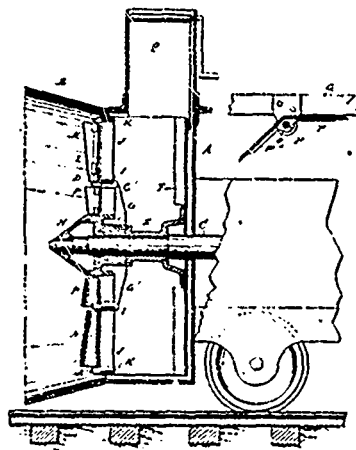
28960 Dellsie's Mode of Packing Fire Wood.



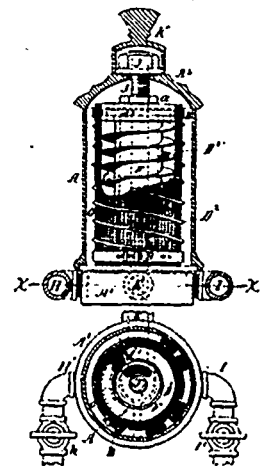
28961 Evans' Wire Straining Machine.



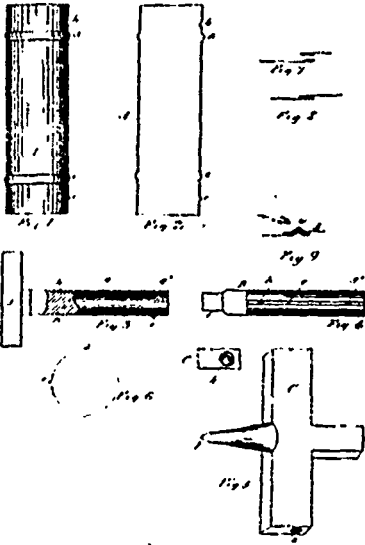
28962 McPaul's Lumber Cart.



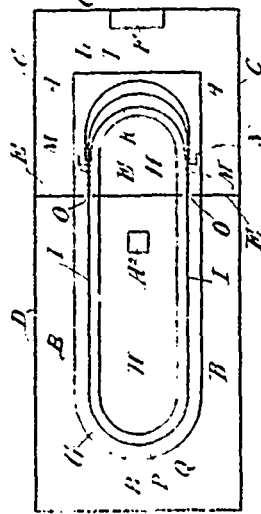
28963 Leslie's Rotary Snow Excavator.



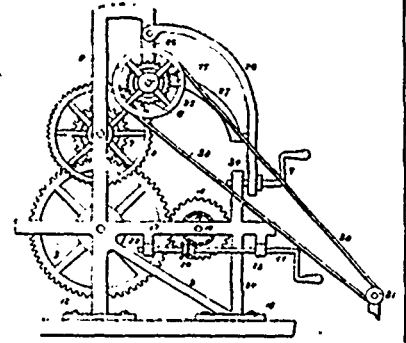
28964 Howes' Filtering Apparatus.



28965 Moyer's Pipe.



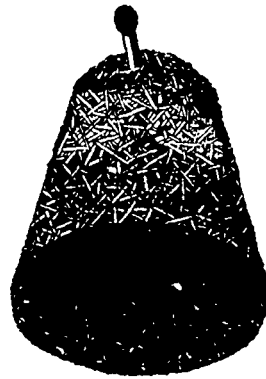
28966 Smith's Apparatus for Mechanical Walting at Meals.



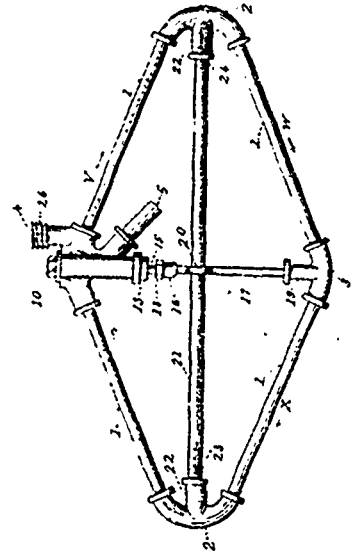
28967 Clay-on's Sewing Machine Motor.



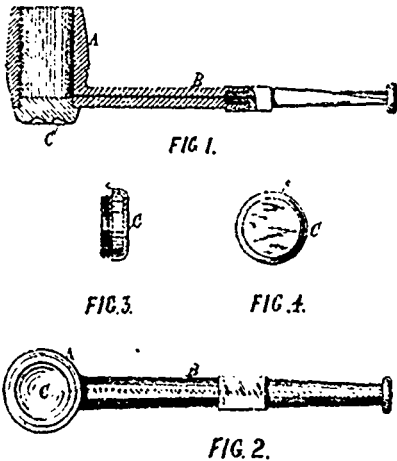
28968 Higge's Nail.



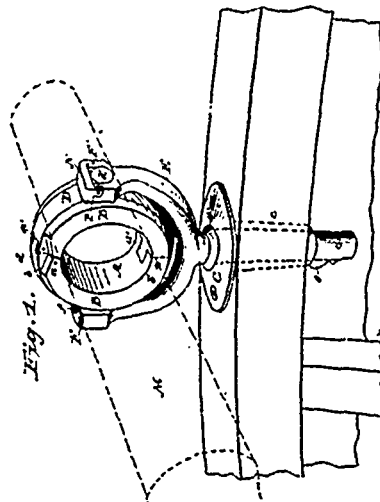
28969 Johanson's Fire Kindler.



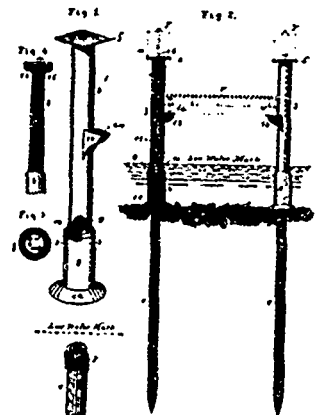
28970 Rehm's Steam Trap.



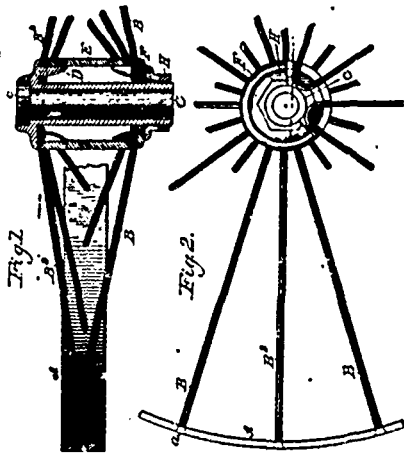
28-71 Spring & Kirkham's Tobacco Pipe.



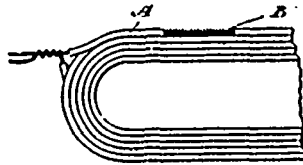
28972 Tompkins' Oar Lock.



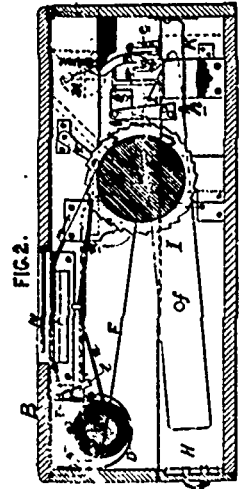
28973 Borneman's Composite Pier for Bridges, etc.



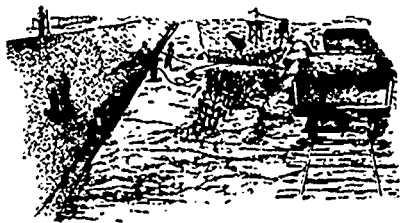
28974 Clouse's Wheel for Vehicles, etc.



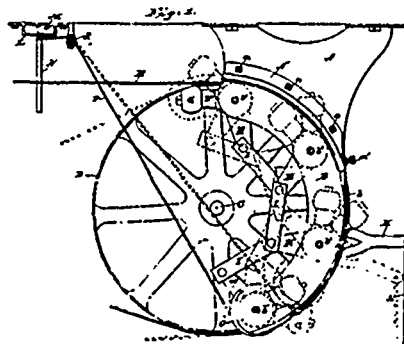
28975 Johnson's Armature of Electric Machine.



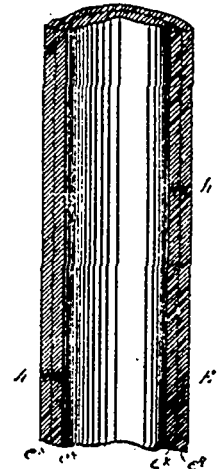
28976 Gledhill's Apparatus for Checking the Receipt of Moneys



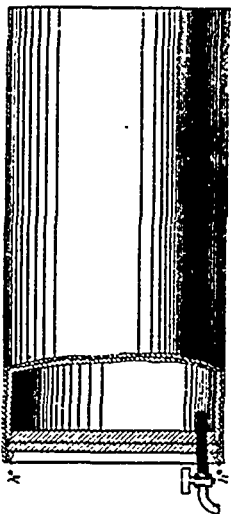
28977 Davy's Method of Burning Clay, etc.



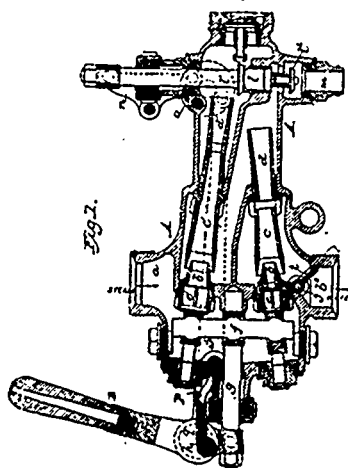
28978 Schenck's Belt Holder & Shifter.



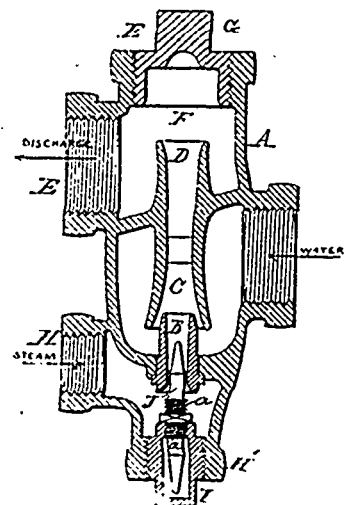
28979 Wilson's Manufacture of Telegraph Poles, etc.



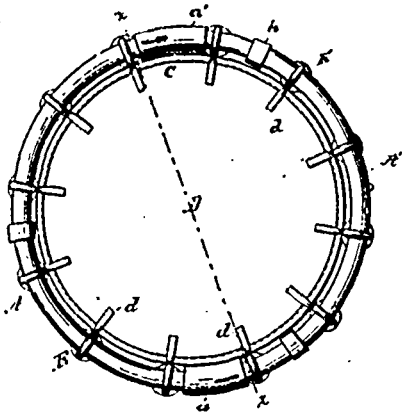
28980 Wilson's Manufacture of Columns, etc.



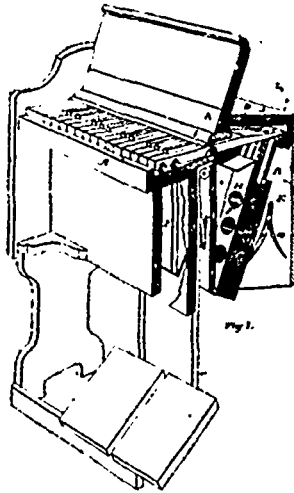
28981 Schutte's Steam Injector.



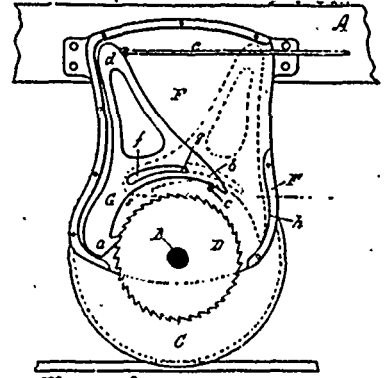
28982 Schutte's Steam Injector.



28983 Browder's Fire Escape.



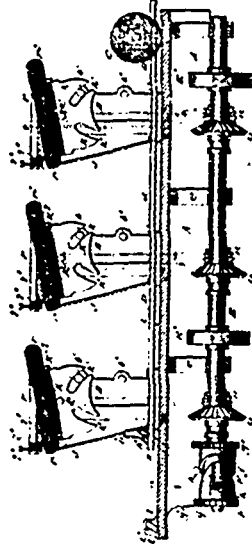
28984 Kydd's Reed Organ.



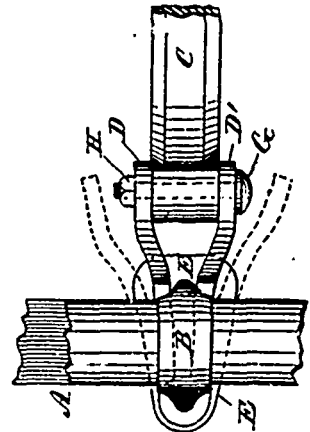
28985 Brown's Car Starter.



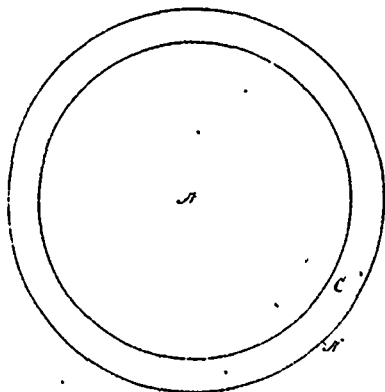
28986 Rothwell's Running Gear for Vehicles.



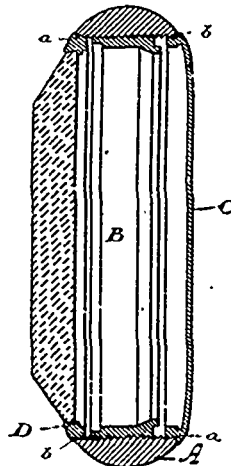
28987 Tuck's Block Printing Machine.



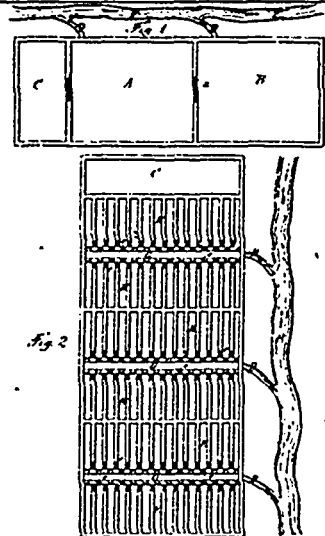
28989 Ross' Thrill Coupling.



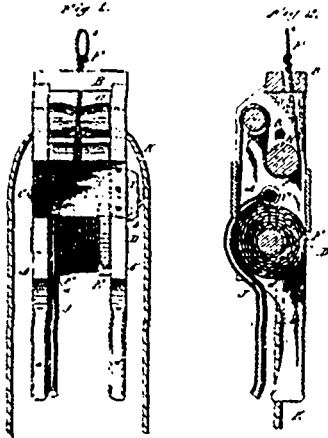
Halstead's Covering for Rollers, etc.



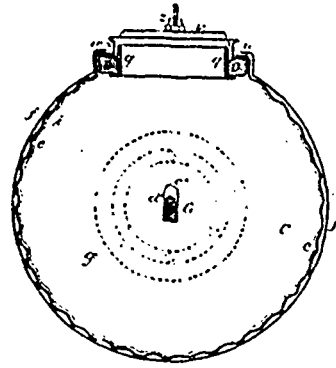
28991 Quigley's Watch Case.



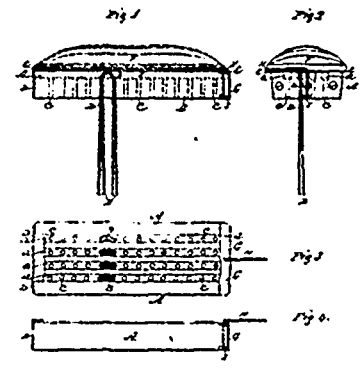
28992 Lugin & DuRoveray's Method of Producing and Supplying Food for Fish, etc.



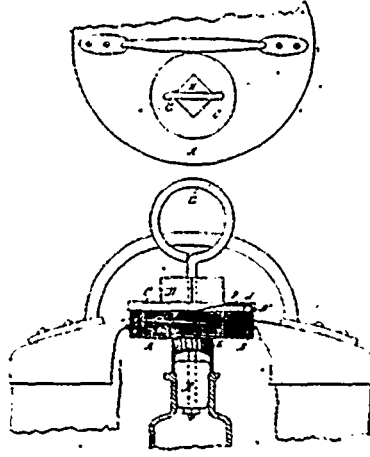
28993 Mattlie's Fire-Escape.



28994 Hassenpflug's Washing Machine.



28995 King's Brush with Removable Cover.



28996 Enrie's Chemical Fire Extinguisher.

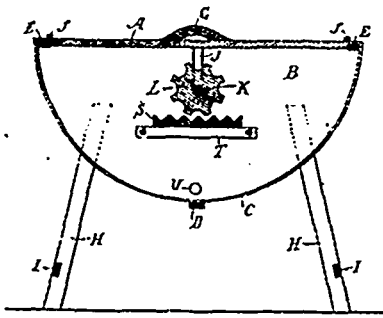
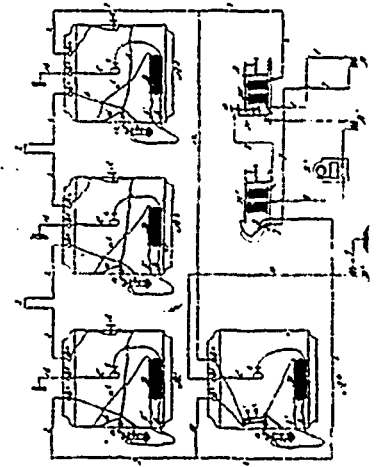
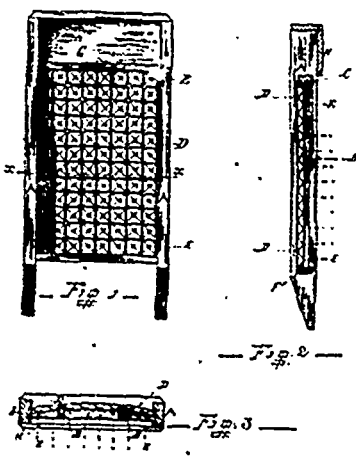


Fig. 3.

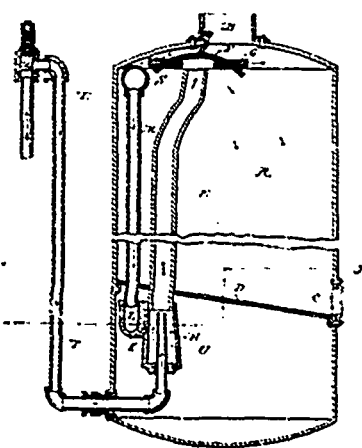
28997 Archambault & Tremblay's Washing Machine.



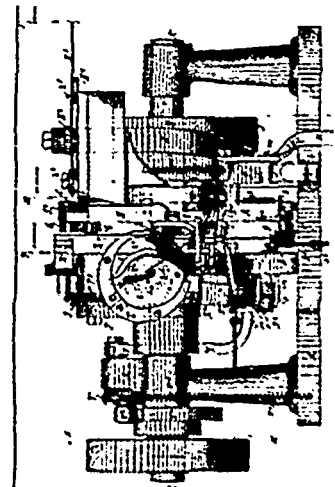
28998 Wright's Electric Call System.



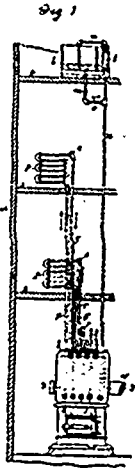
28999 Dowsell's Wash Board.



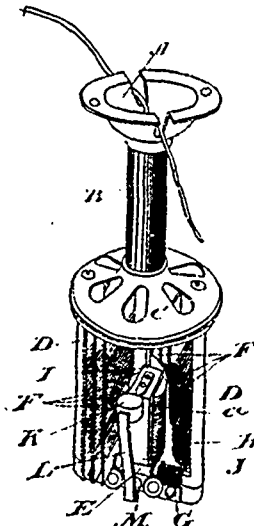
29000 Logan's Digester for Wood Pulp.



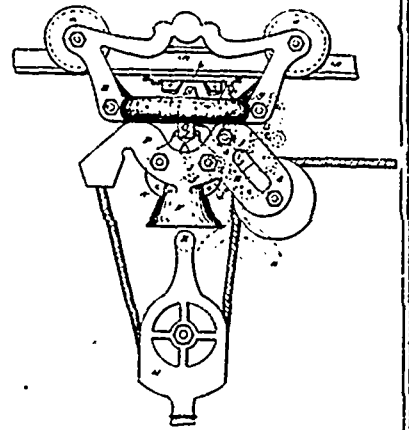
29001 Dancel's Solo Sewing Machine.



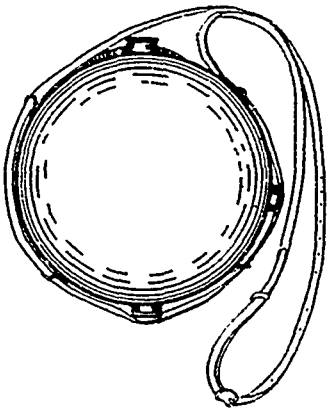
29002 Huntoon's Hot Water Heating Apparatus.



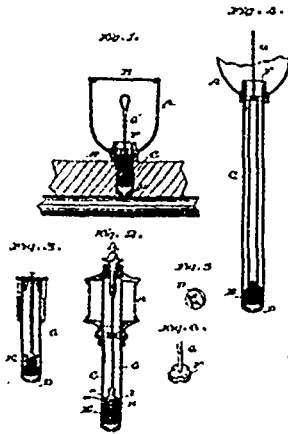
29003 Johnson's Cut-Out for Incandescent Electric Lamps.



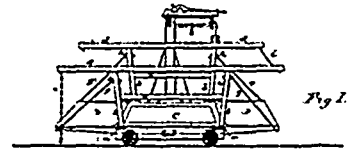
29004 Ney's Hay Elevator.



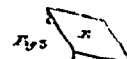
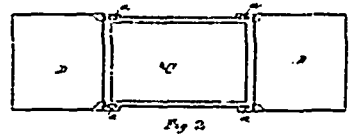
29005 Lewis' Filtering Bottle.



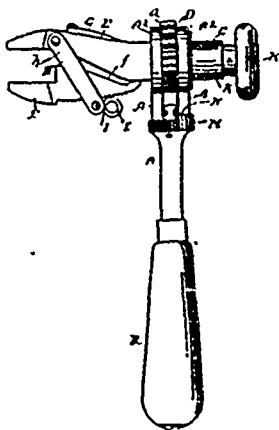
29006 Smith's Sifter.



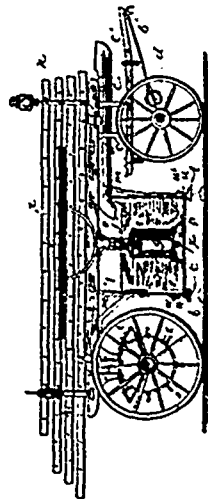
29007 Steedman, Partridge & Turnbull's Platform Scale.



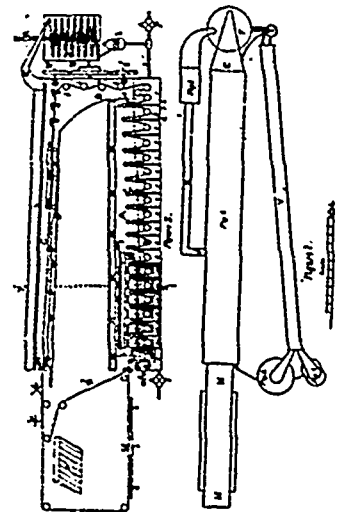
29008 Bryan's Ratchet Wrench.



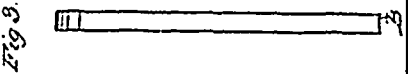
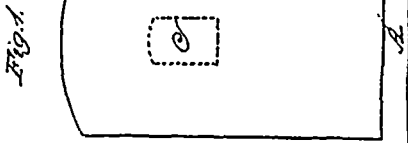
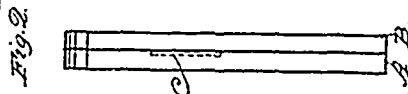
29008 Bryan's Ratchet Wrench.



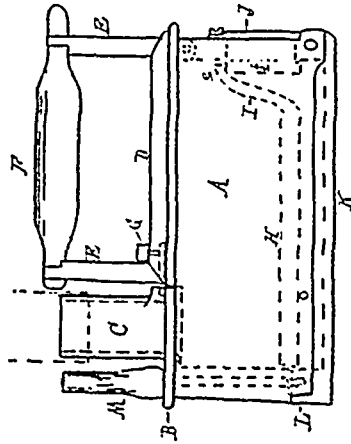
29009 Morrell's Fire Engine.



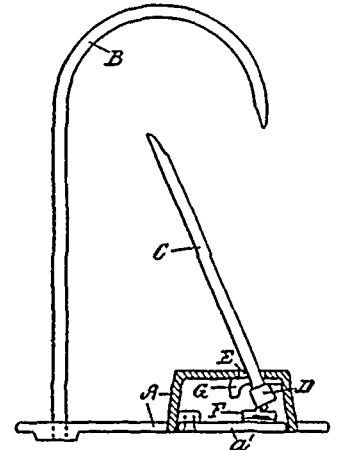
29010 Singer & Judell's Apparatus for Cleaning Wool, etc.



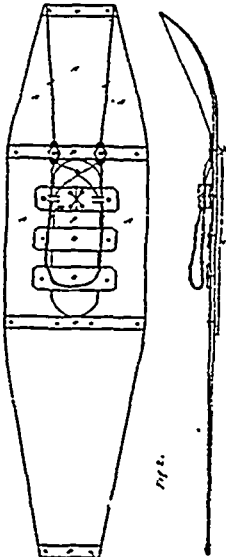
29011 Mille's Memorial Tablet.



29012 Eisenberg's Tailor's Iron.



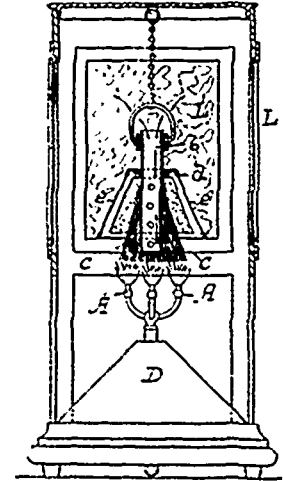
29013 Balcom's Letter and Bill File.



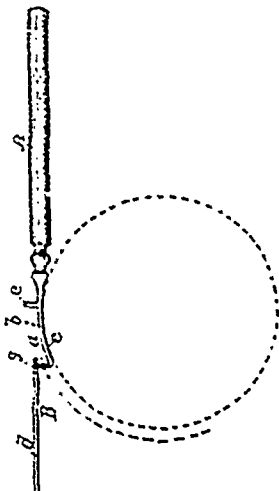
29014 Watson's Snow Shoe.



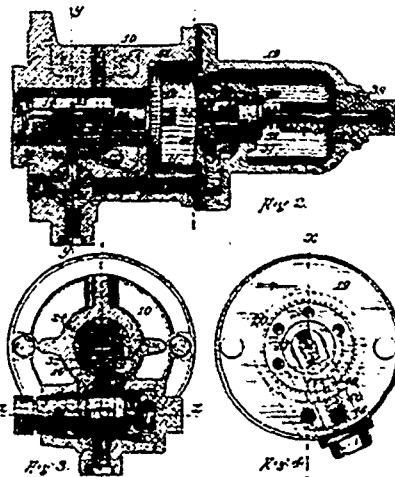
29015 Katz's Steam Ploughing.



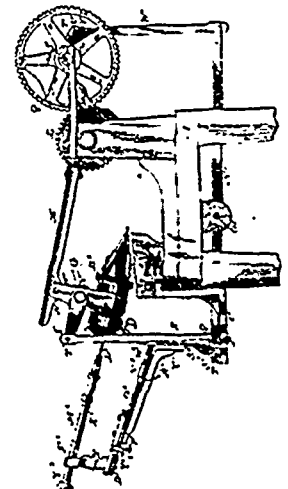
29016 Leeds' Apparatus for Heating or Cooking.



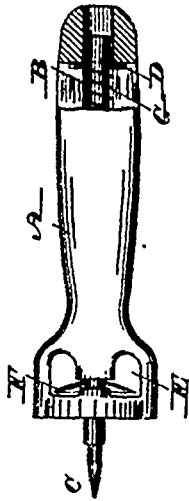
29017 McNeal's Fruit Knife.



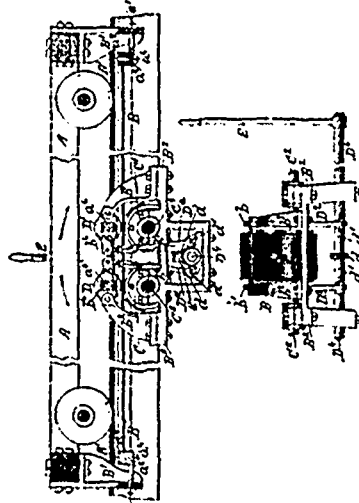
29018 Westinghouse's Fluid Pressure Brake Mechanism.



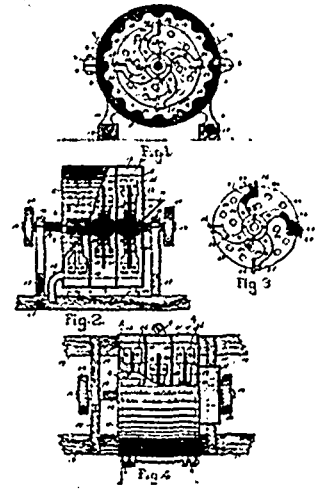
29019 McKim's Nail Plate Feeding Machine.



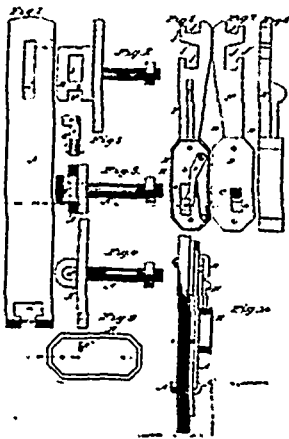
29020 Phillips' Can Opener.



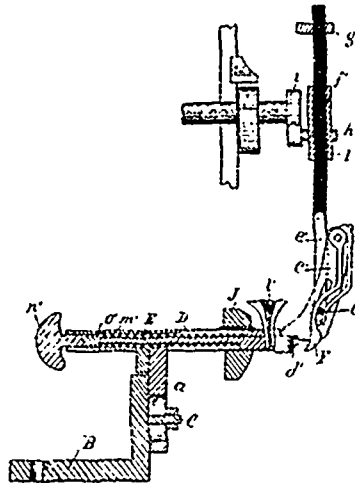
29021 Hoffman's Feed Mechanism for Saw Mill Carriages.



29022 Eames' Oro Pulverizer.



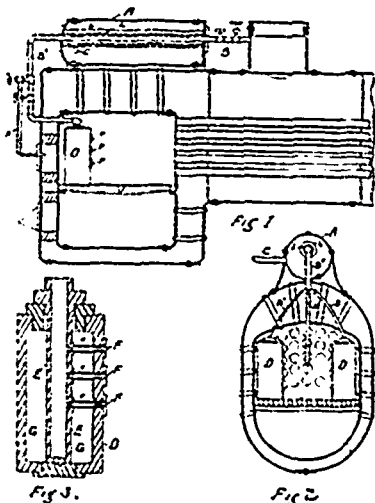
29023 Leonard's Hasp Lock.



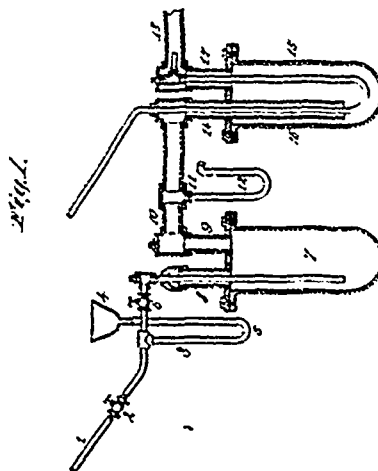
29024 Fréchette's Lasting Machine.



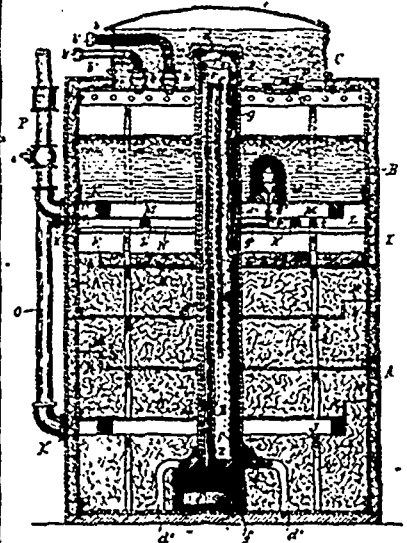
29025 Campbell's Hair Curling and Crimping Device.



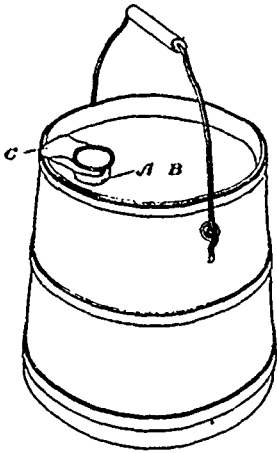
29026 Livingston's Apparatus for Saturating Steam with Hydro-Carbons, etc



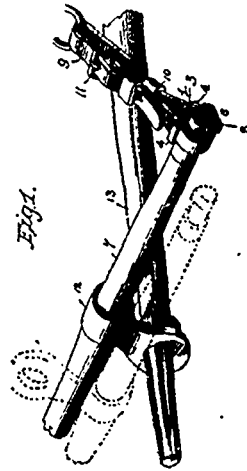
29027 Myers & Altice's Apparatus for Manufacturing Gas



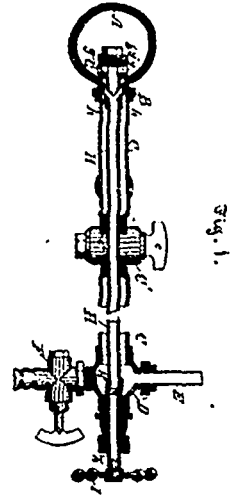
29028 Lawrence's Gas Carburettor.



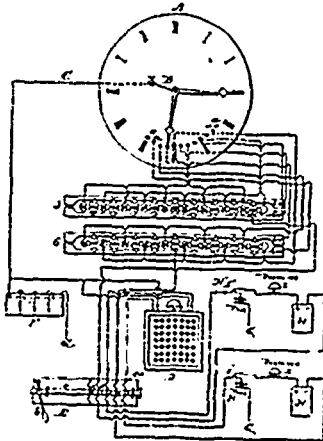
29029 Cane's Syrup Pail.



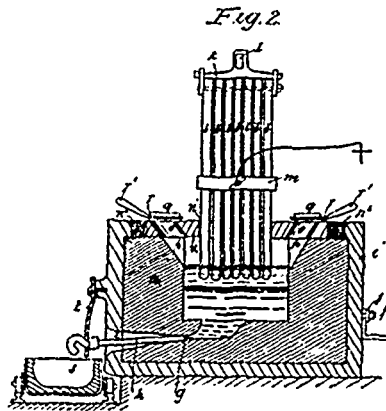
29030 Koch's Fastening for Neck Yokes.



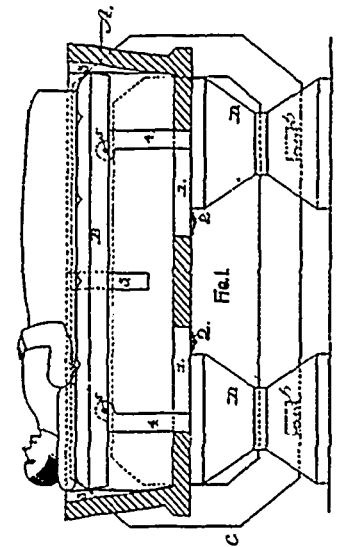
29031 Steinkoenig's Device for Preventing Water Pipes from Freezing.



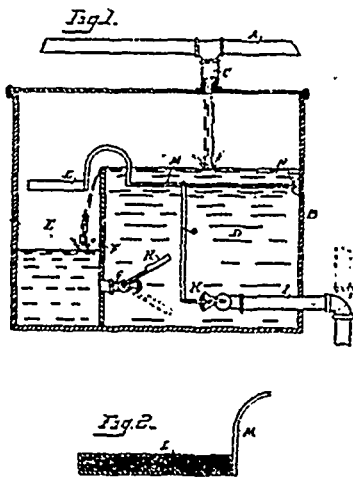
29032 Harford's Clock and Electric Alarm.



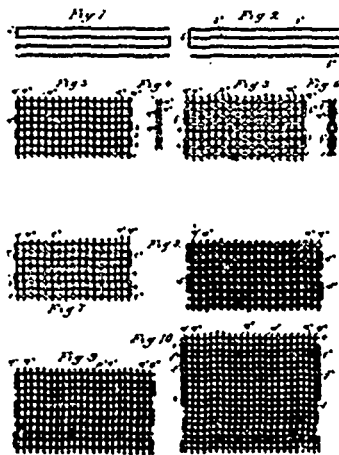
29033 Héroult's Process of Reducing Refractory Oxides, etc.



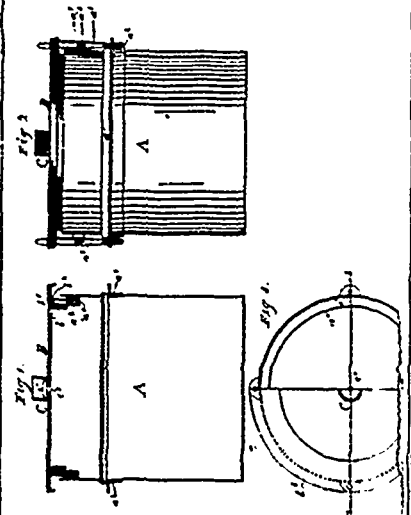
29034 Rice's Burial Casket.



29035 Shay's Water Trap for Gas, Steam, or Air Lines.



29036 Hunt's Woven Fabric.



29037 Stauffer's Sealing Can or Vessel.