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INVENTIONS PATENTED.

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

No. 27,902. Stove Door. (*Porte de poêle.*)

Berry A. Baxter, Mansfield, Ohio, U. S., 2nd November, 1887 : 5 years.

Claim.—1st. The combination of a stove provided with a pair of doors, connecting bars hinged thereto, an anti-friction wheel located at the joined ends of said bars, a track upon which said wheel is confined, and a stop at the forward end of said track, substantially as described. 2nd. A stove provided with a pair of hinged doors having toggle-jointed links connected therewith, and means for retaining the free ends of the links in movable adjustment upon the body portion of the stove, substantially as described. 3rd. In a stove, a pair of doors connected together by jointed bars or toggle links, in combination with a stop upon the body portion of the stove for limiting the forward movement of the free ends of the links, substantially as described.

No. 27,903. Mechanism for Driving the Reel Shaft of a Harvester. (*Mécanisme moteur pour l'axe du râteau d'une moissonneuse.*)

Richard D. Johnson, Milton, Ont., 2nd November, 1887; 5 years.

Claim. 1st. In a harvester, a grain-reel shaft suitably journalled and carried on an adjustable frame, in combination with a tumbling shaft connected to and deriving motion from some suitable moving part of the machine, and so connected to the reel-shaft that the frame of the latter may be adjusted without interfering with the driving gear by which the revolving motion of the tumbling shaft is conveyed to the reel-shaft, substantially as and for the purpose specified. 2nd. The grain-reel shaft A, suitably journalled and carried on an adjustable frame, and having keyed or otherwise fastened to it the bevel wheel K, in combination with the revolving tumbling shaft D, suspended from the shaft A by the bracket I, and connected to the pinion J which meshes with the wheel K, and is so connected to the tumbling shaft D, that it will revolve with it and at the same time may be moved longitudinally upon the said shaft without interfering with its working, substantially as and for the purpose specified. 3rd. The tumbling shaft D, journalled in the bracket I, and connected as described to the pinion J, which meshes with the wheel K keyed or otherwise fastened to the shaft A, as described, in combination with gearing deriving motion from some moving part of the harvester, and so connected to the shaft D that the said shaft may be adjusted without interfering with the satisfactory working of the gearing, substantially as and for the purpose specified. 4th. The adjustable bracket B C, arranged to support the reel-shaft A, as described, in combination with the bar L pivoted to the bracket C and notched, so as to engage with the bracket M when actuated by the spring N, substantially as and for the purpose specified.

No. 27,904. Animal Trap. (*Piège.*)

Henry J. Seymour, Niagara Centre, Ont., 2nd November, 1887; 5 years.

Claim.—1st. In combination with the base provided with posts, jaws hinged on said posts, and the spring having its arms hung on one of said posts beneath the jaws, the bait pan hung on the said post between the spring arms and a catch on the jaws at the hinged ends thereof, and engaging the bolt pan to hold the same in its set position, as set forth. 2nd. In combination with the base provided with posts, jaws hinged on said posts, and the spring having its arms hung on one of said posts, the bait pan hung on said post between the spring arms, and provided with an aperture adjacent to the post, and lugs projecting from the hinged ends of the jaws, and adapted to enter the aperture of the bait pan and engage the latter to hold the same in its set position, as described and shown. 3rd. In combination with the base A, jaws C, C and spring S, the post P provided with the notch *n*, and the bait pan B having a slot *b* by which it is hung on said post, substantially as described and shown. 4th. In combination, the base A and spring S, the post P provided with the notch *n*, the bait pan B hung on said post and provided with the slot *b* and aperture *c*, the jaws C, C hinged on the aforesaid post, and the lugs or hooks *d*, *d* projecting from the jaws and adapted to enter the aperture *c*, substantially in the manner and for the purpose specified.

No. 27,905. Adjustable Strip. (*Chape de bretelle.*)

Thomas O. Potter, Boston, Mass., U.S., 2nd November, 1887; 5 years.

Claim.—An elastic adjustment strap for garments and similar uses, consisting of one or more springs, each of which is covered with a braided fibrous jacket, and a housing for uniting the end or ends thereof by one or more prongs, made integral therewith and extending into the jacket and spring, as and for the purposes described. 2nd. The combination, in an adjustable strap for garment and other similar uses, of a plate having one or more sleeves, a prong *b*¹ for each sleeve integral with the plate, and a jacketed spring or springs, the end or ends of which are enclosed by said sleeve and are fastened thereto by said prong or prongs, as and for the purpose described. 3rd. The elastic adjustable straps for garments and similar uses, comprising two or more coiled springs, each of which springs and the jackets are held and united by metal housings, each of which consists essentially of an enclosing metal plate or plates having inwardly extending clamping binding or holding sections to clamp upon, bind or hold the ends of the jackets, and springs whereby the ends of the jackets and springs are fastened to the housings, substantially as described. 4th. An elastic adjustable strap for garments and similar uses, consisting of two or more springs, a braided fibrous jacket for each spring, and a housing for each of the ends of the springs and the jackets and to which they are secured, each housing comprising a metal plate in two parts, bent or shaped to form separate pockets or receptacles for each spring and jacket, and the two parts of which are united at their ends by the overlapping of the ends of one part upon the ends of the other, substantially as described. 5th. An elastic adjusting strap for garments and similar uses, consisting of two or more springs, a braided fibrous jacket for each spring, and a metal housing for each of the ends of the springs and jackets, and means for fastening or securing the individual ends of the springs and jackets to the housing, whereby the housing acts both to fasten or secure the ends of the springs and jackets, and also to fasten the various ends of the springs and jackets together, substantially as described. 6th. An elastic adjusting strap for garments and similar uses, consisting of two or more springs, a braided fibrous jacket for each spring, and a housing for each of the ends of the springs and jackets to which the ends of the springs and jackets are directly united, the said jackets having formed integral therewith an extension in which is formed a long slot, whereby the adjusting strap is adapted to be secured to inextensible webbing or other material, as and for the purpose described.

No. 27,906. Vehicle Wheel Tire. (*Bandage de roue de voiture.*)

Frank H. Harris, Ohio, U.S., 2nd November, 1887; 5 years.

Claim.—1st. In a rubber tire wheel, a tire grooved or creased upon its sides, and secured to the flanged rim of the wheel by binding wires, substantially as described. 2nd. In combination with the flanged rim A of a wheel, an elastic wire B provided with the shoulders or creases *a*, and secured in place within the flanges of the rim A by binding wires C, substantially as described. 3rd. An elastic tire B, provided with the shoulders or creases *a*, substantially as and for the purposes set forth.

No. 27,907. Car Axle Lubricator.

(*Boîte à graisse.*)

Chester L. Flyint, Brooklyn, N. Y., U. S., 2nd November, 1887; 5 years.

Claim.—1st. In a car axle lubricaror, a pad having its body composed of sponge or other soft porous substance, in combination with a supporting spring and wick both secured to the bottom of the pad, substantially as and for the purpose described. 2nd. In a car axle lubricator, a pad having its body composed entirely of sponge or other soft porous substance, and a suitable covering, in combination with a supporting spring and a wick, both secured to the bottom of the pad, substantially as and for the purpose described. 3rd. In combination, with a pad, constructed as described, the wipers E, arranged and operating substantially as and for the purpose herein described.

No. 27,908. Snow Shovel. (*Pelle à neige.*)

John J. Magee, London, Ont., 2nd November, 1887; 5 years.

Claim.—The combination of the blade A, having a shoulder A² formed integral therewith, handle D, bar C and band B, substantially as shown and forthe purposes hereinbefore set forth.

No. 27,909. Gas Engine. (*Machine à gaz.*)

Peter Murray, jr., Newark, N. J., U. S., 2nd November, 1887; 5 years.

Claim.—1st. The combination, with the power cylinder having its exhaust opening located in position to be uncovered by the power piston as it arrives at the end of its stroke, of a pump for forcing the charges of the explosive mixture into the power cylinder, the pump piston being set in advance of the power piston, and arranged to complete its stroke directly after the power piston has recovered the exhaust opening, substantially as described. 2nd. The combination, with the power cylinder and piston of a pump for charging the cylinder, having its piston arranged to complete its stroke in advance of the power piston, and a positively actuated charging valve, arranged to close the induction port at or substantially at the time the pump completes its stroke, substantially as described. 3rd. The combination, with the power cylinder having induction ports at its opposite ends, and an exhaust opening at its middle, of a pump for forcing the charges of the explosive mixture directly into the power cylinder, the position of the pump being arranged to complete its stroke in advance of the power piston, and directly after the power piston has recovered the exhaust opening, substantially as described. 4th. The combination, with the power cylinder having induction ports at its opposite ends, and an exhaust opening at its middle, of a pump for forcing the charges of the explosive mixture directly into the power cylinder, the piston of the pump being set in advance of the power piston, and a valve for closing the induction port at or substantially at the time the pump completes its stroke, substantially as described. 5th. The combinaion, with the power cylinder having an exhaust opening in position to be uncovered by the power piston as it arrives at the end of its stroke, of a pump for forcing the charges of the explosive mixture into the power cylinder, the piston of the pump being set in advance of the power piston, and a valve for opening the induction port after the pump piston has commenced its stroke and for closing the port, at or substantially at the time the pump piston completes its stroke substantially as described. 6th. The combination, with the power cylinder having an exhaust opening at its middle, of a pump for charging the cylinder, the piston of said pump being set in advance of the power piston, and a single valve arranged to open the induction port after the pump piston has commenced its stroke, close said port at or substantially at the completion of the stroke of the pump piston, and fire the charge at or after the completion of the stroke of the power piston, substantially as described. 7th. The combination, with the power cylinder having a double-acting piston, of a pump for charging said cylinder, and a single exhaust opening located at or near the middle of the power cylinder, and uncontrolled by an exhaust valve, substantially as described. 8th. The combination, with the power cylinder and stationary permanent and igniting burners, of a single charging and firing valve, provided with means for admitting the charges to the cylinder, confining them therein and for establishing communication between the permanent and igniting burners, and establing communication between the latter and the charges to fire them, substantially as described. 9th. The combination, with a stationary igniting burner located in a recess in the valve chest, of a firing valve having a firing chamber which is filled with an explosive mixture, and communicates with the power cylinder through a check valve, and is provided with a port through which it is brought into communication with the igniting burner, by the movement of the valve at the proper time to fire the charge, substantially as described. 10th. The combination, with the power cylinder and an igniting burner for firing the charges in the cylinder, of a valve having a firing chamber through which the explosive mixture passes in entering the cylinder, and in which a portion of the mixture is confined when the induction port is closed, a part controlled by a check valve which communicates with the chamber and cylinder, and a port which is brought into communication with the igniting burner by the movement of the valve, substantially as described. 11th. The combination, with the powder cylinder and an igniting burner for firing the charges in the cylinder, of a valve having a firing chamber through which the explosive mixture passes in entering the cylinder, and in which a portion of the mixture is confined when the induction port is closed, a port controlled by a check valve, which communicates with the chamber and cylinder. a port which is brought into communication with the igniting burner by the movement of the valve, and means by which the igniting burner is fed from the mixture confined in the chamber until the firing takes place, substantially as described. 12th. The combination, with the power cylinder and stationary permanent and igniting burners, of a firing valve constructed and operated to establish communication between the permanent and igniting burners to light the latter, and to then establish communication between the igniting burner and the charge to fire it, and a check valve for closing the firing port as soon as the charge is fired, substantially as described. 13th. The combination, with a stationary igniting burner, fed by a mixture of gas and air, and a stationary master light, of a valve, having a channel 77, by which the igniting burner is brought into communication with the master-light as the valve is moved, substantially as described. 14th. The combination, with a stationary igniting burner, fed by a mixture of gas and air, and a stationary master-light, of a valve by which the igniting burner is brought into communication with the charge in the cylinder to explode it, and by which the burner is also brought into communication with the master-light, to be re-lit after each explosion, substantially as described. 15th. The method or process of hastening the combustion of the charges in a gas engine, which consists in admitting or introducing a quantity of air into the cylinder of the engine after the charge has been fired and before the exhaust is opened, substantially as described. 16th. The combination, with the power cylinder and piston, of an air opening or port, through which a quantity of air is admitted or introduced into the cylinder after the charge has been fired and before the exhaust is opened, substantially as described. 17th. The combination, with the power cylinder and piston, of an air opening or port through which a quantity of air is admitted or introduced into the cylinder after the charge has been fired and before the exhaust is opened, and a valve for controlling said opening or port, substantially as described. 18th. The combination, with the power cylinder and piston, of an air chamber communicating with the cylinder and with the atmosphere, a valve for preventing the escape of the air from the chamber, and a valve arranged to open communication between the chamber and the cylinder after the charge is fired and before the exhaust is opened, substantially as described. 19th. The combination, with the power cylinder and piston, of an air opening or port arranged to be uncovered by the piston after the charge has been fired and before the exhaust is opened, and a valve for controlling said opening or port, substantially as described. 20th. In a gas engine, the combination, with a power cylinder, of means for supplying a quantity of steam to the same, in advance of the charge of the explosive mixture, substantially as described. 21st. In a gas engine, the combination, with the power cylinder, of a valve having a duct or chamber through which the explosive mixture passes in charges, the cylinder, and means by which said chamber is filled with air, previous to the passage of each charge of the explosive mixture through the same, substantially as described. 22nd. The combination, with the power piston, having the circumferential groove or recess 79, of a port or ports formed in the cylinder, through which water is admitted to said groove, as the piston reciprocates, substantially as described. 23rd. In a gas engine, an igniting burner provided a cup-shaped body 19, arranged to surround and protect the flame, substantially as described. 24th. The combination, with the chamber 89 containing a body of water, and provided with connections by which a flow of water is maintained through the chamber of the exhaust pipe 90 opening downward, so as to deliver the exhaust products directly onto the surface of the body of the water in the chamber, substantially as described. 25th. The combination, with the power cylinder, of a pump for supplying the explosive mixture to said cylinder, a tank, and connections by which the explosive mixture may be allowed to pass from the pump, either dieectly to the power cylinder or to said tank, and by which the cylinder may be supplied, either from the pump or from said tank, substantially as described. 26th. In a gas engine, the combination with the power and pump cylinders and their piston rods, of the open receptacle 38 for containing a quantity of water to surround the rods and keep them properly cooled, each rod passing through two stuffing boxes, substantially as described. 27th. In a gas engine, the oil chamber 47, having the positively actuated valve 28, and ducts communicating with the parts to be oiled, substantially as described. 28th. In a gas engine, the combination with a cock or valve for controlling the quantity or richness of the explosive mixture supplied to the power cylinder of the plunger 63, valve 118 and connections, substantially as described. 29th. The combination with the cock or valve for controlling the quantity or richness of the explosive mixture supplied to the power cylinder of the plunger 63 upon the valve-rod 109, the valve 118 and connections, substantially as described.

No. 27,910. Manufacture of Explosives.

(*Fabrication des mêlanges explosibles.*)

Carl Roth, Berlin, Germany, 2nd November, 1887; 5 years.

Claim.—1st. The process of producing explosives by the mixture with oxygen-yielding substances, of compounds obtained from coal tar or other tar, or from fractional products of the same, by incorporating into the tar or the said fractional products, both chlorine and nitro-groups, substantially as hereinbefore specified. 2nd. As an article of manufacture, an explosive composed of oxygen-yielding substances, and of a compound or compounds obtained from coal tar or other tar, or from fractional products of the same by the incorporation thereinto of both chlorine and nitro-groups, substantially as described.

No. 27,911. Felt Boot. (*Botte de feutre.*)

Morris E. Taber, Buffalo, N.Y., U.S., 2nd November, 1887: 5 years.

Claim.—The combination, with an overshoe, of a felt boot provided with a protecting band or strip C secured to the outer side of the felt boot, and composed of a lower portion c^1 extending into the overshoe and an upper portion c^2 overlapping the top of the overshoe, substantially as set forth.

No. 27,912. Milk Gauge. (*Jauge à lait.*)

John S. Elliott, Bombay, N.Y., U.S., 2nd November, 1887; 5 years.

Claim.—1st. A milk gauge, consisting of jointed bars or rods adapted to be adjusted upon one another and held in clamped position, substantially as described. 2nd. A milk gauge, consisting of jointed bars or rods adapted to slide upon one another, and having an adjustable clamping connection and squared ends or rests, substantially as described. 3rd. A milk gauge, consisting of jointed bars or

rods marked with a scale, and having an adjustable clamping connection whereby they can be adjusted upon one another or extended to form a milk scale, substantially as described. 4th. A milk gauge, consisting of the sections 1, 1, connected by the slot 2, bolt nut and washer 3, 4 and 5, and link 6, and having the scale 9 and turned up square ends 7, substantially as described.

No. 27,913. Jack Screw. (*Vis de cric.*)

Charles H. Hopkins and George W. Knight, Lyndonville, Vt., U. S., 2nd November, 1887; 5 years.

Claim.—1st. The combination of the hollow standard A, the bevel gear B mounted on the upper end of the standard, the screw C passing therethrough and into the internal part of the standard, the shaft D formed integral with a portion of the standard and projecting horizontally therefrom, the bevel-gear mounted on the said shaft and meshing with the gear B, the ratchet wheel F formed integral with the gear E, the lever G having the apertures f^1, f^1 near its opposite edges at the outer end, the double-acting pawl having the teeth f^3, f^4 adapted to engage the ratchet-wheel F, and provided with the slot f in its lower end, the said pawl being pivoted on the lever G and the torsional spring s, having one end secured in the said slot f, and its other end extending slightly beyond said apertures and provided with the pin f^2, adapted to engage the said apertures f^1 in the lever, substantially as specified. 2nd. In a jack-screw, the combination, with the standard A, a screw C therein, a bevel-gear B seated in the upper end of said standard, and provided with an internal screw-thread engaging the thread on said screw-shaft D, a bevel-gear E mounted on said shaft D of said standard at right angles to said gear B, and engaging therewith a ratchet-wheel F, integral with said gear E, and a handle G loosely mounted on said stub-shaft, of a double pawl F^1 pivoted on said handle and provided with a slot f in its outer end, and a torsion spring S, one end of which enters said slot f, and the other end of which is provided with a laterally-projecting pin f^2 adapted to enter holes f^1 in said handle, said pin being normally farther from the pivot of said pawl than said holes, as and for the purpose set forth.

No. 27,914. Dust Pan. (*Porte-ordure.*)

Richard Sampson, Sherbrooke, Que., 2nd November, 1887; 5 years.

Claim.—As a new article of manufacture, a dust pan, made and constructed substantially as shown and described.

No. 27,915. Art or process of Impregnating Chamois Skin with Rouge. (*Art ou manière de saturer de rouge les peaux de chamois.*)

John E. Darby and Elson Blakeslee, Cleveland, Ohio, U. S., 2nd November, 1887; 5 years.

Claim.—1st. The process of impregnating chamois skin with rouge, which consists in working the rouge while dry more or less into the meshes of the skin, and then applying a permeating liquid to drive the rouge into the skin, substantially as set forth. 2nd. In the impregnation of chamois skin with rouge, by means of a penetrating liquid, the process of driving the rouge into the skin, which consists in applying the rouge to the inside surface of the skin, and then saturating a suitable pad with the penetrating liquid and rubbing it over the rouge and skin, substantially as set forth. 3rd. As a new article of manufacture, chamois skin impregnated with rouge, substantially as set forth 4th. As a new article of manufacture, chamois skin impregnated with rouge, containing alkaline properties, substantially as set forth.

No. 27,916. Wooden Pulley. (*Poulie de bois.*)

The Dodge Manufacturing Company, (assignee of Charles N. McNeal), Mishawaka, Ind., 2nd November, 1887; 5 years.

Claim—1st. The mode of procedure in building a wooden split pulley herein described, which consists in first building the central part of said rim, second in dividing the same transversely on an irregular line to make an interlocking joint, third in adding a section to each edge of said central part and diving the same with a straight saw, whereby the adjoining ends of the rim are provided with interlocking portions as set forth. 2nd. A wooden split pulley provided with interlocking projections and recesses in the adjoining ends of the rim, formed by dividing the same on a curved line, substantially as set forth. 3rd. A pulley provided with an arm or spoke C, having at its ends the wedging dovetailed tenons g fitting in a dovetailed mortise h in the pulley-rim, and the fastening wedges i, substantially as set forth. 4th. A separable wooden pulley having its rim divided on an irregular line to form interlocking portions at adjoining ends, and having its spokes or arms at their outer ends embedded in the rim with dovetailed tenons and mortises, substantially as set forth. 5th. A split pulley having a section A, and the arm C mortised into the same near its end, and provided with a stay-bolt K extending from said arm back to the pulley-rim at a distance from its end, substantially as set forth. 6th. A split pulley having the rim A, and the arm C mortised into the same near its point of division, and provided with the stay-bolt K and the anchoring-pin L inserted in the rim, as set forth.

No. 27,917. Construction of Timber Roofs. (*Construction des toits en bois.*)

Robert R. Little, South Shields, and John Hall, Newcastle, Eng., 3rd November, 1887; 5 years.

Claim.—In timber roofs, the combination of the boards A, with grooves a therein, the engaging and joint covering strips B and the saddle pieces C, substantially as described and illustrated.

No. 27,918. Hydro-Carbon Furnace. (*Foyer à hydrocarbures.*)

Ezra T. Williams and Walter B. Wright, Troy, N. Y., (assignees of Walter B. Wright, Chicago, Ill.), U. S., 3rd November, 1887; 5 years.

Claim.—1st. In a hydrocarbon furnace, substantially such as described, the combination of a boiler and burners, a pipe H for delivering the vapor to be burned located partly within the bridge wall, a gas chamber I located within the fire-pot and connected with the pipe H, and a series of pipes J also connected to the gas chamber I and extending horizontally out through the front of the furnace. 2nd. In a hydrocarbon furnace, the combination with a boiler, of a pipe H provided with burners G, a gas chamber I extending transversely across the fire-pot and connected to the pipe H by means of pipe H_3, a series of pipes J connected to the opposite ends of the gas chamber I and extending into the front wall of the furnace, a series of generators K, K^1, K^2 below the pipes J and connected to a suitable steam and oil supply, and a series of pipes J^3 connecting the pipes J with the retort K_2. 3rd. In combination with a boiler and a fire-pot, a gas chamber I, a pipe H communicating with said chamber, burners supplied by said pipe, and a series of pipes J connected with said chamber at one end, and embedded at their other ends in the front wall of the furnace, the chamber and pipes being located within the fire-pot and adapted to have a fire built upon them. 4th. In combination with a boiler and a fire-pot, a gas chamber I, a pipe H communicating with said chamber, burners supplied by said pipes, and a series of pipes J connected with said chamber at one end, and embedded at their outer ends in the front wall of the furnace, the chamber and pipes being located within the fire-pot, and adapted to have a fire built upon them, and a pipe P connected at one end with the water-space of the boiler, and at the other end with the chamber I, as and for the purpose set forth. 5th. In a hydrocarbon furnace, the combination of a boiler, a fire-pot and gas or vapor burners, a grate composed of a series of pipes, a water pipe connected with the latter, and a gas pipe also connected with the grate pipes and with the burners, the gas and the water pipes being each provided with a valve, substantially as shown and described. 6th. In a hydrocarbon furnace, the combination of a boiler, a fire-pot, a series of retorts K, K^1 and K^2 located therein, and projecting at one or both ends through the walls thereof, and provided with removable caps, a pipe H provided with burners, a chamber I connected with pipe H, and a series of pipes J adapted to form a grate surface, and connected with the retorts and with the generator, substantially as shown and described. 7th. In a hydrocarbon furnace, the combination, with a boiler, of a grate composed of tubular bars J, connected with a gas generating retort, and adapted to serve the twofold purpose of supporting a fire for the generation of steam in the boiler, and afterwards serving as distributing pipes for the gas generated. 8th. In a hydrocarbon furnace, the combination, with a boiler, of a grate composed of pipes J, a series of gas generators, burners supplied therefrom, and valved water, oil, steam and discharge piper P, Q, O, L, arranged and operating substantially as shown and described 9th. In a hydrocarbon furnace, the combination of a boiler A, a fire-pot and gas or vapor burners, of a grate composed of a series of pipes J adapted to have a fire built upon them to generate steam within the boiler, a series of gas generating retorts connected with the pipes J and communicating with the burners, a valved pipe, as P, adapted to supply water to the pipes J, a valved outlet pipe L also connected with the pipes J, and valved steam and oil supply pipes O and Q connected with the retorts, all substantially as shown and described. 10th. In a hydrocarbon furnace, in combination with boiler A and fire-pot or chamber, a series of pipes J therein, a chamber I connecting said pipes at one end, a series of retorts K, K^1, K^2 below and connecting with the pipes J, valved steam and oil pipes O, Q connected with one of the retorts, a valved water pipe P connected with the chamber I, and a valved gas distributing pipe provided with burners G, and connected with the gas chamber, all substantially as shown. 11th. In a hydrocarbon furnace, the combination, with a boiler and fire-pot, of a grate consisting of a series of pipes, a water pipe connected with the latter, a gas pipe also communicating with the grate pipes, and with burners for consuming the gas, and valves applied to the gas pipe at either side of the point of communication with the grate pipes, whereby water may be prevented from entering the same, and gas may be admitted to or excluded from the gas pipe at either or both sides of said point at will. 12th. In combination, with a case or shell provided with oil and steam inlets, and with a discharge nozzle, a rotatable hollow valve provided with a longitudinal depression or slot to register with the oil inlet, and a stem mounted within the hollow valve, and adapted to regulate the discharge of steam from the latter. 13th. In combination, with case or shell 1 provided with discharge nozzle 3, steam inlet 6 and oil inlet 15, a hollow and rotatable valve 7 provided with steam inlet 19, and a longitudinal slot or depression 20, and a valve stem 12 mounted within the hollow valve 7, all substantially as shown and described. 14th. In combination, with case or shell 1 having steam inlet 6 and oil inlet 15, a conical discharge nozzle 3, a hollow valve 7 provided with steam inlets 19 and with a tapered end, a longitudinal depression 20 formed in the outer face of the conical end, a conical discharge outlet also in the end of the hollow valve, and a valve stem provided with a tapered nose 22 to fit into the discharge outlet of the hollow valve, all substantially as shown. 15th. In combination, with case or shell 1 having steam and oil inlets 6, 16, a discharge nozzle 3, a rotatable hollow valve 7 provided with a longitudinal slot or depression 20, an opening 15 elongated at right angles to the axis of the valve, and serving to convey the oil from the oil inlet 16 to the depression 20, and a valve stem 12 mounted within the hollow valve, all combined and arranged substantially as shown. 16th. In combination, with case or shell 1 having steam and oil inlets and a discharge nozzle, a hollow valve 7 provided with a central steam discharge outlet, and with a longitudinal depression, as 20, to register with the oil inlet, a worm wheel 5 secured to said hollow valve, a worm 10 mounted in the casing to engage with said worm wheel, and a valve stem mounted within the hollow valve and arranged to regulate the discharge of steam therefrom. 17th. In combination with case or shell 1, provided with steam inlet 6, circumferential enlargement 17, oil inlet 16 and discharge nozzle 3, the rotatable hollow valve 7 pro-

vided with lateral openings 19 to register with steam inlet 6 or the enlargement 17, and with a longitudinal depression, as 20, to register with the oil inlet, and a valve stem 12 mounted and adjustable within the hollow valve, all substantially as shown. 18th. In combination with case or shell 1, provided with suitable steam and oil inlets, a discharge nozzle, a shoulder, as 27, and a transverse enlargement, as 23, a hollow valve, as 7, provided with an internal stem 12, a worm wheel 5 secured upon the valve 7 and resting against or in proximity to the shoulder 27, a worm 10 mounted in the enlargement 23 to mesh with the worm wheel, and a cap, as 4, screwing into the end of the shell or case and serving to retain the worm wheel in position. 19th. In an injector burner, the combination, with the case or shell 1, constructed substantially as shown and described, of the rotatable hollow valve 7 provided with a stem 12, and with a loose end plate 8, and a spring interposed between said plate and the case or shell 1. 20th. In an injector burner, the combination, with the case or shell 1, constructed substantially as shown, of the hollow valve 7, the screw stem 12 and worm gearing 5 10, located wholly within the casing for rotating the hollow valve. 21st. In an injector burner, the combination of a case or shell, constructed substantially as shown and described, a rotatable hollow valve, as 7, adapted to regulate the discharge of oil, and a longitudinally-adjustable stem, as 12, mounted within the hollow valve, and adapted to regulate the discharge of steam. 22nd. In an injector burner, the combination, with a case or shell, provided with suitable oil and steam inlets and a discharge nozzle, a rotatable hollow valve mounted therein, a spring arranged substantially as shown to hold the valve to its seat, and a valve stem adjustable within the hollow valve. 23rd. In an injector burner, the combination, with a case or shell, provided with suitable oil and steam inlets and a discharge nozzle, a hollow valve mounted therein, a worm wheel encircling the hollow valve and mounted within the shell (the valve being free to slide through the worm wheel), and a spring bearing upon the end of the hollow valve, all substantially as shown.

No. 27,919. Autographic Telegraph.

(*Télégraphe autographique*)

The Writing Telegraph Company, New York, N.Y. (assignee of James H. Robertson, Rutherford, N.J.), U. S., 3rd November, 1887; 5 years.

Claim.—1st. In an autographic telegraph, the combination, with the receiving stylus arranged to have a free lateral motion over the surface of the paper and armature or armatures, of a liquid-containing receptacle, substantially as described. 2nd. In an autographic telegraph, the combination, with the receiving stylus arranged to have lateral motion over the surface of the paper and armature or armatures, of a liquid-containing receptacle in which said armature or armatures are immersed, substantially as described. 3rd. The combination, with two electro-magnets placed at an angle to each other, of an armature carrier mounted to have a lateral motion, and provided with magnetically separate armatures for said electro-magnets, substantially as described. 4th. The combination, with two electro-magnets placed at an angle to each other, of an armature carrier mounted to have a lateral motion, and provided with magnetically separate armatures arranged to overlap the poles of said magnets, substantially as shown and described. 5th. An armature-carrier, provided with two sets of magnetically separate armatures, the armatures of one set being magnetically connected with those of the other, substantially as described. 6th. An armature-carrier provided with two sets of magnetically separate armatures, the armatures of one set being magnetically connected with those of the other by an adjustable connection, whereby the two sets can be adjusted nearer to or farther from each other, substantially as described. 7th. An armature-carrier, provided with magnetically separate armatures secured to said carrier by a non-magnetic block and set screws, substantially as described. 8th. A flexible laterally movable armature carrying-rod, provided with magnetically-separate armatures, substantially as described. 9th. A movable armature-carrier, provided at its upper end with a stylus, or pen pivoted thereto, substantially as described. 10th. An armature-carrier, provided at its upper end with an arm pivoted thereto, and carrying a fountain-pen, substantially as described. 11th. A movable armature carrier, provided with a counterbalanced stylus, or pen pivoted thereto, substantially described. 12th. A movable armature carrier, provided at its upper end with an arm pivoted thereto, and having an opening and a stylus or pen secured in said opening, substantially as described. 13th. An armature-carrier, provided at its upper end with a bifurcated part, in combination with an arm pivoted to said part, and carrying a pen or stylus at its outer end, substantially as described. 14th. A movable armature-carrier, provided with a projection, in combination with a vessel containing a liquid in which said projection is arranged to dip, substantially as described. 15th. An armature, provided with a projection, in combination with a vessel containing liquid, in which said projection is arranged to dip, substantially as described. 16th. A movable armature carrier, provided with a projection, in combination with a vessel having a depression in its side, as described, to permit said armature-carrier to occupy a central position, said projection being arranged to dip into a liquid contained in said vessel, substantially as described. 17th. The combination, with two line wires and receiving and transmitting instruments (which latter vary the current) included therein, the said line wires being connected at each end to a single ground wire of two batteries of equal power, having poles opposed to each other, substantially as described. 18th. The combination, with the paper feed mechanism of a brake lever for arresting the action of said feed mechanism, and a switch-lever arranged to disengage said brake-lever, when said switch-lever is shifted to put one or both instruments in circuit, substantially as described. 19th. The combination, with the paper feed mechanism of a brake lever for arresting said feed mechanism, a switch-lever provided with a projection for depressing said brake lever, and a spring for returning the latter to operative position, substantially as described. 20th. The combination, with two piles of carbon disks, placed near and at an angle to each other, of a lever arranged to exert a pressure on either one or both of said piles, according to the direction in which said lever is moved, substantially as described. 21st. The combination, with the piles of carbon disks, placed near and at an angle to each other, of a long lever arranged to exert a pressure near its pivot on either one or both of said piles, whereby the free end of said lever has a large field of motion, and the hand of the operator is not cramped in its movement, substantially as described. 22nd. The combination with two piles of carbon disks, placed near and at an angle to each other, of a lever arranged to exert a pressure on either one or both of said piles, according to its movements, a table provided with an opening, through which said lever extends, and a holder for the hand of the operator, substantially as described. 23rd. The combination, with two piles of carbon disks, placed near and at an angle to each other, of a lever arranged to exert a pressure on either one or both of said piles, according to its movements and a holder for the hand of the operator, substantially as described. 24th. The combination with two piles of carbon disks, placed near and at an angle to each other, of a lever arranged to exert a pressure on either one or both of said piles, according to its movements, and a holder for the hand of the operator, universally pivoted to said lever, substantially as described. 25th. The combination with two piles of carbon disks, placed near and at an angle to each other, of a lever arranged to exert a pressure on either one or both of said piles, according to its movements, and strips of metal arranged between said lever and piles, to which the conductors are attached, substantially as described. 26th. The combination with two piles of carbon disks, placed near and at an angle to each other, of a lever provided with pressure points and arranged to exert a pressure on either one or both of said piles, and strips of metal arranged between said lever and piles for attachment of conductors, substantially as described. 27th. The combination with two piles of carbon disks placed near and at an angle to each other, of a lever universally pivoted at its lower end and arranged to exert a pressure on either one or both of said carbon piles, according to its movements at points between its pivot and free end, substantially as described.

No. 27,920. Adjustable Stove Pipe Hanger and Fastener. (*Appareil mobile de suspension des tuyaux de poêle.*)

John W. Fryer, Toronto, Ont. (assignee of James Stewart, Detroit, Mich., U.S., 3rd November, 1887; 5 years.

Claim.—A stove pipe hanger, consisting of the tube A, the sliding rod B, the set screw *a*, the angularly adjustable pipe supporting band B1, and the screw or bolt *b*, substantially as and for the purpose hereinbefore set forth.

No. 27,921. Chromatic Printing Machine.

(*Machine à imprimer en couleurs.*)

William H. Forbes, Boston (assignee of Dwight S. Clark, Cambridge, and William C. Wendté, Lancaster), Mass., U. S., 3rd November, 1887; 5 years.

Claim.—1st. A chromatic printing press, consisting essentially of an impression cylinder, having around its periphery two or more distinct impression surfaces, with gaps between the successive surfaces for the reception of grippers, and two or more form cylinders in operative relation to and in register with the impression surfaces, substantially as described. 2nd. In a chromatic printing press, the combination of two or more form cylinders, with an impression cylinder having around its periphery two or more distinct impression surfaces, with adjoining gaps for the reception of suitable grippers, the length of each impression surface with its adjoining gap being equal to the circumference of each form cylinder, substantially as described. 3rd. In a chromatic printing press, the combination of an impression cylinder, having its periphery divided into a number of equal parts, consisting each of a distinct impression surface with adjoining gap for the reception of suitable grippers, with a number of form cylinders in operative relation to and in register with the impression surfaces, substantially as described. 4th. A chromatic printing press, consisting of an impression cylinder having around its periphery two or more distinct impression surfaces, with adjoining gaps for the reception of suitable grippers, two or more form cylinders in operative relation to, and in register with the impression surfaces and feeling and delivery devices, substantially as described. 5th. In a chromatic printing press, the combination of an impression cylinder, having around its circumference a number of distinct impression surfaces, with adjoining gaps, and a set of grippers in each gap, with two or more feed boards, each in simultaneous operative relation to two or more sets of the aforesaid grippers, substantially as set forth.

No. 27,922. Machine for Rolling the Threads of Screws and Bolts. (*Machine à fileter les vis et les boûlons.*)

Hayward A. Harvey, Orange, N. J., U. S., 3rd November, 1887; 5 years.

Claim.—1st. In a machine for rolling the threads of screws or bolts, two endwise reciprocating and rocking dies, the opposed faces of which are suitably curved, and are provided with systems of parallel ribs extending spirally in relatively opposite directions respectively, means for imparting to one of the said dies two or more to-and-fro endwise movements during the time occupied in rolling the thread upon a blank introduced between the dies, means for imparting to the other die one to-and-fro endwise movement during the same time, and means for imparting during the same time to each of the said dies, first, a prescribed range of slow-rocking movement upon its longitudinal axis in one direction, while the thread is being formed upon the blank, and then a quick return rocking movement in the opposite direction after the threaded blank has been discharged, and while the dies are making their concluding movements by which they reach the relative positions, which they are required to occupy preparatory to the feeding of another blank into the space between their working faces. 2nd. The combination, substantially as set forth, of the endwise reciprocating and rocking dies D1 and G1, provided respectively with the stems D and G, the

crank arms I_1 and K_1 loosely splined upon the said stems respectively, two suitably-shaped cams engaging tne ends of the crank-arms T_1 and K_1 respectively, and mounted upon the cam shaft F, and means for appropriately moving the cam shaft F, and thereby rocking the dies D_1 and G_1 upon their longitudinal axes during their endwise reciprocating movements. 3rd. The combination, as set forth, of the die G_1, the retracting spring F_3, the scroll cam F_1 mounted upon the same shaft F, the rocking lever F^2 bearing at one end upon the scroll cam F_1, and at the other end upon the end of the stem G of the slow-moving die G_1, and means for appropriately moving the cam shaft F and thereby imparting the required endwise reciprocating movements to the die G_1. 4th. The combination, as set forth, of the cam *e* mounted upon the counter-shaft E, the cam-bar e_1, the retracting spiral spring e_2, the crank-arm f_1, the crank-pin *f*, adjustably secured to the crank-arm f_1, and the rocking cam-shaft F having mounted upon it suitable cams for imparting rocking movements to the dies D_1 and G_1 respectively. 5th. The combination, as set forth, of the endwise-reciprocating die G_1, the carriage L, the deliverer N provided with sliding bearings in the carriage L, the ways M, M_1 and the endwise-reciprocating die D_1. 6th, The carriage L, suitably connected with and partaking of the endwise reciprocating motions of the die G_1, the deliverer N provided with sliding bearings in the carriage L, the rocking lever *n*, pivotally affixed to the carriage L and at its upper end engaging the deliverer N, in combination with the horizontally adjustable gauge-plate O for catching the lower end of the rocking lever *n* during the movements of the carriage L, and thereby causing the rocking-lever *n* to rock upon its axis and impart to the deliverer N a range of motion greater than the range of motion of the carriage L. 7th. The gauge-plate O, presenting its edge O_2 in a position in which it intersects the path of motion of the rocking lever *n*, and means for horizontally adjusting the gauge plate O, and thereby fixing the limit to the backward motion of the deliverer N in the act of delivering a blank to the dies. 8th. The laterally-adjustable plate H, and the cap H_1 secured thereto, affording the concentrically-grooved bearing for the die G_1, means for horizontally adjusting the plate H and the cap H_1 toward and from the die D_1, and means for rigidly securing the plate H and the cap H_1 to the bed upon which the plate rests in the position in which they may have been adjusted.

No. 27,923. Two-Wheeled Vehicle.

(*Voiture à deux roues.*)

Charles Bew, Angola Ind., U.S., 3rd November, 1887; 5 years.

Claim.—1st. The combination, with a vehicle, of brackets firmly secured to the axle, said brackets carrying in their vertically barreled ends sliding rods, springs supporting said rods, and a seat rigidly secured to the upper ends of said rods, substantially as set forth. 2nd. The combination, with a vehicle, of brackets firmly secured to the axle or axle frame, said brackets provided with vertical guides at their ends, rods sliding in said guides, springs supporting said rods, a seat secured rigidly to the upper end of said rods, a foot-rest connected at the rear to the lower ends of the front rods, and at the front end to the shafts, substantially as set forth. 3rd. The combination of the axle A, brackets B, rods C, C_1, springs C_{11}, and seat D, substantially as set forth. 4th. The combination of the axle A, brackets B, rods C, C_1, springs C_{11}, C_{111}, seat D, strut E, braces F, G, H, and J^6, shaft I, studs I_1, springs *i*, bar K and slats *k*, substantially as set forth. 5th. The combination of the axle A, brackets B, strut E, brace F having flat feet f_1 dowelled in the axle, and rimmed seats f_{11} on the reverse tie-plate f_{111} adapted to fit the seats f_{11}, the braces G, H and J, and the shafts I, substantially as set forth. 6th. The combination of the shafts I, studs I_1, springs *i*, bars K, rods C, slat k_1, guide K_1, springs K_{11} and strut E, substantially as set forth.

No. 27,924. Safety Car Heater.

(*Calorifère de sûreté pour chars.*)

Henry C. Dennis, Tyrone, Penn., U.S., 3rd November, 1887; 5 years.

Claim.—1st. In a car-heater, the case comprising the inner and outer shells having the registers in the sides, the inlet air chamber formed between their lower ends, and communicating with the space within the inner shell, and the smoke chamber formed between their upper ends, in combination with the stove arranged in the inner shell, and having the pipe communicating with the smoke chamber, for the purpose set forth substantially as described. 2nd. In a car-heater, the combination of the case having the opening B in its lower side, communicating with an opening in the bottom of the car, the air-chamber K in the lower side of the case having the opening P communicating with the interior of the case, the annular chamber G between the inner and outer shells of the case, said shells having the registers, the smoke chamber at the upper end of the case, and the stove arranged in the interior of the case and confined therein, and having the pipe communicating with the smoke chamber, substantially as described. 3rd. In a heater for cars, the combination of the inclosing case adapted to receive and confine a stove, the said case having the register to radiate heated air, the slide plate adapted to close the register, and having the arm projecting through the bottom of the stove, the pin to secure the said arm, the spring to close the slide plate over the register when the pin is released, and means substantially as set forth connecting the pin with one of the trucks of the car, substantially as described.

No. 27,925. Automatic Snow Cleaning Railway Switch. (*Aiguille chasse-neige automatique de chemin de fer.*)

Ulysses S. Lutz, Bloomsburg, Penn., U. S., 3rd November, 1887; 5 years.

Claim.—1st. In a railway switch, the combination of the main rails A, B, the blocks F and G^1 on the sides thereof, and the switch-rails having the extended treads at their free ends supported on the blocks F and G_1, and adapted to sweep over and rest upon the upper sides of the main rails, substantially as described. 2nd. The combination, in a railway-switch, of the main rails, the switch-rails having their free ends adapted to bear upon the main rails and reduced to a wedge-shaped point, and the inclined lifting-blocks on the inner sides of the main rails adapted to engage the flanges of the wheels, and raise the treads of the latter from the main rails onto the switch rails, and to clear the extreme thin-pointed ends thereof, for the purpose set forth substantially as described. 3rd. The combination of the main rails, the switch-rails having their free ends adapted to pass over and rest upon the top of the main rails, the lever connected to the said switch-rails to operate the same, and the longitudinally-movable lifting blocks arranged on the inner sides of the main rails, and connected to the operating lever and thereby movable simultaneously with the switch-rails, for the purpose set forth substantially as described. 4th. The combination, in a railway-switch, of the inclined guide-blocks S on the inner sides of the main rails, and the lifting-blocks T supported on the said blocks S and adapted to raise the threads of the wheels from the tops of the rails, the said lifting-blocks being movable on the supporting-blocks, substantially as described. 5th. The combination, in a railway switch, of the inclined blocks S on the inner sides of the main rails, and having the recesses S_2 on their upper sides, and the longitudinally movable lifting blocks T on the blocks S, and having the offset T^2 adapted to engage the recesses S_2, for the purpose set forth substantially as described.

No. 27,926. Electric Lamp. (*Lampe électrique.*)

Warren S. Hill, Boston, Mass., U. S., 3rd November, 1887; 5 years.

Claim.—1st. In an electric-arc lamp, the combination, with the main and shunt magnets and cut-out terminals, of an armature-lever pivoted between said magnets, supporting the clutch and carrying a connecting-piece for the cut-out, and an adjustable device connected to said armature, whereby a practical balance of forces is obtained upon the armature when the lamp is in operative condition, and when the balance is disturbed the cut-out is operated, substantially as described. 2nd. In an electric-arc lamp, the combination, with the main and shunt magnets and the cut-out terminals, of a pivoted lever forming or carrying armatures for said magnets, and a connecting-piece for the cut-out, the clutch connected to said armature, and an adjustable spring-acting in conjunction with the weight of the clutch, substantially as described. 3rd. In an electric-arc lamp, the combination, with the main and shunt magnets, of an armature lever cut-out, terminals arranged upon the shunt magnet, and a connecting-piece for the cut-out terminals carried by said armature-lever, substantially as described. 4th. The combination, with the cut-out terminals, of a connecting-sleeve insulated from its support, and loosely connected therewith, whereby a good bearing is obtained between the terminals and the sleeve, substantially as described. 5th. The combination, with the main and shunt magnets and armature-lever, of a cut-out terminal arranged upon the shunt magnet, and a connecting device attached to the end of the lever and adapted to engage the terminals, substantially as described. 6th. The combination, with the main and shunt magnets and armature-lever, of cut-out terminals arranged upon the shunt magnet, a connecting device attached to the end of the lever, and a spring to operate said lever, substantially as described. 7th. In an electric-arc lamp, the combination, with the magnets and armature lever, of the cut-out terminals and connector, and a catch to hold said connector away from said cut-out terminals, substantially as described. 8th. In an electric-arc lamp, a carbon-holder having a clamp consisting of a rigid part, and a movable part having parallel bearing-surfaces, the movable part being provided with an elongated pivot-slot, and a rigid arm projecting over the movable part, and carrying a clamp-screw, whereby the carbon may be secured between the parallel bearing surfaces of clamp, substantially as described.

No. 27,927. Steam Radiator Valve.

(*Valve et calorifère à vapeur.*)

Thomas L. McKeen, Easton, Penn., U. S., 3rd November, 1887; 5 years.

Claim.—1st. In an air-valve for steam radiators, the combination of a tube closed at its upper end, and having a steam-inlet at its lower end, and a valve-seat in its lower end, a tube secured around the valve-seat and extending to near the upper end of the outer tube, and a valve rod secured at its upper end at the upper end of the tube, and of a length to fit upon the valve-seat with its valve when expanded, as and for the purpose shown and set forth. 2nd. In an air-valve for steam radiators, the combination of a tube upon its upper end, a cap fitting upon the lower end of the tube and having a laterally projecting pipe for admitting steam, and having a valve-seat in its lower closed end, a tube secured with its lower end around the valve-seat, and extending to near the upper end of the outer tube, and a valve rod secured with its upper end in the upper end of the tube, and having its valve at the lower end fitting upon the seat when the valve rod is expanded, as and for the purpose shown and set forth. 3rd. In an air-valve for steam radiators, the combination of an outer tube, a cap secured to the lower end of the tube and having a laterally-extending steam inlet-pipe, a downwardly-extending screw-threaded tube having a valve-seat at its upper end, a tube within the outer tube secured at its lower end around the valve-seat, and extending to near the upper end of the outer tube, a cap closing the upper end of the tube and having a removable screw-plug in its upper end, and a valve-rod having its upper portion adjustably secured to said cap, and having its uppermost end square, and having the valve at its lower end fitting upon the seat when the valve is expanded, as and for the purpose shown and set forth. 4th. In an air-valve for steam radiators, the combination of a cap at one end of the valve-tube having dove-tailed notches or recesses in its inner end, a spring having dove-tailed ends fitting in the recesses, and having a screw-threaded perforation in its bulged centre, and an expansible valve-rod having a screw-threaded upper end fitting in the perforation, as and for the purpose shown and set forth. 5th. In an air-valve for steam radiators, the combination of an outer tube, a cap secured to the lower end of the tube, and having a laterally-extending steam-inlet pipe, a downwardly-extending screw-threaded tube having a valve-seat at its upper end, a tube within outer tube secured

at its lower end around the valve-seat and extending to near the upper end of the outer tube, a cap having a reduced screw-threaded lower end fitting in the upper end of the outer tube and formed with diametrically opposite dove-tailed notches or recesses in its end, and having a screw-plug in its top, a spring having dove-tailed ends fitting in the recesses, a bulged central portion, and a screw-threaded perforation formed therein and a valve-stem having a screw-threaded upper portion fitting in the perforation of the spring, a square upper end and of a length to fit at its lower end against the valve-seat when expanded, as and for the purpose shown and set forth.

No. 27,928. Twine. (*Cordonnet.*)

Edward H. Haskill, Gloucester, Mass., U. S., 3rd November, 1887; 5 years.

Claim.—As a new article of manufacture, a twine composed of a central strand of mainlasisal flax or hemp yarn, surrounded by one or more plies of jute strands *b*, *b*, *b* for the purpose of increasing the strength and retaining the softness and pliability of the article, as herein above set forth.

No. 27,929. Bath Brush. (*Brosse à bain.*)

Charles J. Bailey, Newton, Mass., U.S., 3rd November, 1887; 5 years.

Claim.—1st. The herein-described brush, combined with the detachable handles, substantially as and for the purpose set forth. 2nd. The brush having the loop-like handles i^2, combined with the handle i^7, substantially as described. 3rd. The brush having the back i and teeth i^1 made of soft rubber, the said back i having a transverse slot through it, combined with a handle passed through said slot, substantially as described. 4th. The brush consisting of the back and teeth, and having the permanently charged magnets embedded in the back, substantially as described. 5th. The brush consisting of the back, and teeth made of soft rubber in one piece, and having the permanently charged magnets embedded in the back and the handle, substantially as described. 6th. The brush consisting of the back, and teeth made of soft rubber in one piece, and having the permanently charged magnents embedded in the back, and also having the studs or equivalent attaching devices, substantially as described.

No. 27,930. Automatic Car Lamp Extinguisher (*Eteignoir automatique de lampe de char.*)

Robert S. Stratton, Orillia, Ont., 3rd November, 1887; 5 years.

Claim.—1st. A lamp burner provided with a pivotal cap adapted to cover the top of the wick tube or tubes, and clear the same when desired, a bar carried by links pivoted to the wick tube or tubes, and pressed upwards by a spring the upper end controlling the movement of the cap, and counterpoised by a weight placed loosely in a receptacle at the lower end and adapted to leave its seat at a given inclination or impulse, substantially as set forth. 2nd. In combination, with a wick tube B, the caps F, links G and H, springs I, bar K, cup L and weight M, substantially as set forth.

No. 27,931. Bicycle. (*Bicycle.*)

James Brussie, Oakland, Cal., U.S., 3rd November, 1887; 5 years.

Claim.—1st. A bicycle attachment, consisting of auxiliary wheels, mounted and carried by arms pivoted about the axle of the large main wheel of the machine as a centre, a lever connected with the arms and passing up beside the main wheel to within reach of the rider, whereby the auxiliary wheels may be adjusted to or from the ground, and a guide-bar for directing and securing the lever, substantially as described. 2nd. A bicycle attachment, consisting of the auxiliary side wheels, located one on each side of the large main wheel of the machine, and mounted in arms pivoted about the axle of the large wheel as a centre, whereby the auxiliary wheels may be adjusted to or from the ground, a lever for effecting this adjustment and a guide-bar to direct and hold the lever, substantially as described. 3rd. A bicycle attachment, consisting of an auxiliary front wheel located forward of the vertical plane of the axle, of the large main wheel of the machine, and mounted in an arm pivoted about said axle as a centre, a lever within reach of the rider, whereby the auxiliary front wheel may be adjusted and a guide-bar directing and securing the lever, substantially as described. 4th. A bicycle attachment, comprising arms pivoted about the axle of the large main wheel of the machine as a centre, and carrying in their lower ends auxilliary wheels, a forked lever embracing the main wheel and connected with said arms, whereby they are moved on their pivoted centres to adjust their wheels, and a curved guide-bar secured to the head of the machine, and passing down over the large main wheel for directing and securing the lever, substantially as described. 5th. A bicycle attachment, comprising flanges pivoted about the the axle of the large main wheel of the machine as a centre, arms bolted radially to said flanges and adapted to be readily applied and removed, auxilliary wheels carried by said arms, and an operating lever bolted to said flanges, whereby it may be readily applied and removed, said lever being adapted to turn the flanges on their centres, whereby the auxilliary wheels are adjusted, substantially as described. 6th. A bicycle attachment, comprising flanges pivoted about the axle of the large main wheel of the machine as a centre, and having radial wings, arms removably connected with the wings and carrying auxiliary wheels, a forked lever embracing the main wheel and removably connected with the wings of the flanges, and a curved guide-bar for directing and securing the lever, substantially as described.

No. 27,932. Roller. (*Rouleau d'agriculture.*)

William Potter, Perth, Ont., 4th November, 1887; 5 years.

Claim.—1st. The combination of the covered drums with the iron sections as a centre, substantially as and for the purposes hereinbefore set forth. 2nd. A roller presenting a surface, uneven, sharp and corrugated, substantially as and for the purposes hereinbefore set forth.

No. 27,933. Card Printer. (*Imprimeuse de cartes.*)

Wellington P. Kidder, Boston, Mass., and John R. Carter, Niagara Falls, N.Y., U.S., 4th November, 1887; 5 years.

Claim.—1st. The combination, in a card printer, of a wheel having printing characters on the side of its rim, with an impression surface, having a sunken space on each side to allow the card being printed to be held away from the types on each side of the type, immediately over the printing surface, substantially as described. 2nd. The combination, in a card printer, of a printing surface, an impression surface to support the card or article being printed, and means, as the frisket N, for depressing the card on each side of said impression surface, substantially as described. 3rd. A card printer, provided with a printing wheel, having printing characters on both sides of its rim, substantially as described. 4th. The combination, in a card printer, of a printing wheel constructed to print a single letter at a time, and a movable gauge for regulating the position of the card being printed, substantially as described. 5th. A card printer, provided with a printing wheel, running in reversible bearings, and having printing characters on both sides of its rim, substantially as described. 6th. In a card printer, the combination of a printing wheel, with a lever for operating the same bearing on the side of the rim of the wheel opposite the latter being printed, substantially as described. 7th. In a card printer, the combination of a horizontal wheel, having printing characters on the sides of the same, a lever working on a stationary fulcrum, and passing over and acting on said wheel, and extending beyond the same, and an impression surface to receive the impress of the type wheel, substantially as described. 8th. The combination, in a card printer, designed to print a single letter at a time of a printing surface, a frisket designed to protect out of the letters on the card being printed from the action of the printing surface, and having an aperture through which said printing surface acts on the card, and a part cut away to allow of the printed letter being seen when the card is being adjusted for the printing of the next letter, substantially as described. 9th. The combination, in a card printer, of a printing surface, an impression surface, a frisket having a hole for the passage of the type and a series of small projections on the under side of the frisket to depress the portion of the card last printed, and keep it from contact with the under side of the frisket, substantially as described. 10th. The combination, in a card printer, of a printing wheel, a pair of vibrating arms partly surrounding said wheel, and a yoke mounted in said arms in which said wheel is mounted, substantially as and for the purpose specified. 11th. The combination, in a card printer, of a pair of vibrating arms mounted on a rock shaft, a yoke mounted in the free ends of said arms, a printing wheel turning in said yoke, and a lever, its fulcrum near the centre on which the arms vibrate and acting upon the wheel, substantially as described. 12th. The combination, in a card printer, of a pair of vibrating arms mounted on a rock shaft, a yoke mounted in the free ends of said arms, a printing wheel turning in said yoke, and a lever having its fulcrum on said rock-shaft and extending across and beyond said wheel and pressing on the rim of the same, substantially as described-

No. 27,934. Machine for Forming Dress Shields. (*Machine à façonner les sous corsages.*)

Edward A. Levian, Toronto, Ont., 4th November, 1887; 5 years.

Claim.—1st. In a machine for forming dress shields, the combination, with a male die or former, of a matrix having one part moveable, for the purpose set forth. 2nd. In a machine for forming dress shields, the combination, with a male die or former, of a matrix formed of two separate plates and heated boxes attached thereto, one-half of such matrix being moveable, for the purpose set forth. 3rd. In a matrix for forming dress shields, the combination, with two heated boxes, of separate moulding plates attached to such boxes and projecting above the upper sides of same, for the purpose specified. 4th. In a matrix for forming dress shields, the combination of a stationary heated box, a moveable heated box, separate moulding plates affixed thereto and means for locking same together, substantially as and for the purpose specified. 5th. The combination, with the stationary box O and swinging box O1, of the shaft R having cams, and an operating handle and the locking arm S, substantially as and for the purpose described. 6th. In a machine for forming dress shields, the combination, with a frame and a matrix, of a male die, a plunger carrying same and having a rack formed thereon, a weighted lever having a toothed segment engaging said rack, a friction wheel and a brake, substantially as and for the purpose specified. 7th. The combination, with the frame and wheel G, of the brake-shoe H, shaft K having cam K and on operating handle, substantially as and for the purpose specified.

No. 27,935. Carriage Spring. (*Ressort de voiture.*)

John McFarlane, Otterville, Ont., 5th November, 1887; 5 years.

Claim.—1st. The special form of the spring A, and the lock E combined therewith, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the said specially formed spring and lock with the body bar B, and the gearing bar F by means of the bolt C, the clip, or clamp, D and the shackle G, substantially as and for the purpose hereinbefore set forth.

No. 27,936. Cutter Head. (*Porte-outil.*)

John C. Humphreys, Braxton Court House, W.V., U. S., 5th November, 1887; 5 years.

Claim.—1s. A stock or bit-holder, having two series of convex surfaces *b*, *b1*, excentric to the axis of the stock, each series extending half the length of the said stock, with the advance edges *c* of one series of convex surfaces centrally intermediate the advance edges *c* of the other series of convex surfaces, substantially as herein shown and described. 2nd. The combination of the cutter bar or stock A,

having a double series of eccentrically-curved equi-distant bit-bearing surfaces *b*, *b*1, each series extending half the length of the cutten bar or stock, with the advance edges *c* of one series centrally intermediate the advance edges of the other series, the detachable and interchangeable bits B, B1, of equal length throughout, constructed to fit the said bearing surfaces, and adapted to cut at an acute angle, and means for detachably securing the bits to the cutter-bar or stock, substantially as herein shown and described. 3rd. The washers D, provided with packets *g* adapted to carry removable weights, in combination with the cutter-bar and a series of bits, arranged around said bar and the screws C, substantially as and for the purpose herein specified.

No. 27,937. Machine Tool-Holder.

(*Porte-outil de machine.*)

Dudley S. Seymour, Hartford, Conn., U.S., 5th October, 1887 ; 5 years.

Claim.—The combination of the stock A, provided with the slot B, and the eye-bolt E, passing through that slot, the two parts being so constructed and combined that the eye-bolt holds the tool rigidly in a groove extending across the side of the stock and across the slot B, all substantially as described.

No. 27,938. Fence. (*Clôture.*)

Richard H. Sarvis, London, Ont., 5th November, 1887 ; 5 years.

Claim.—1st. A portable fence, consisting of a series of panels, constructed of boards or rails A attached alternately on front and back of end boards B, and connected lug links *d*, *e* passing through suitable mortices in said panels, said links being attached at their opposite ends to the heads of supporting half trestles D, and cross bars E abutting against end boards of panels, substantially as shown and specified. 2nd. In combination with the above described panels of a portable fence, the half trestles D having cross-bars E hinged thereto abutting against end boards B of panels and attached thereto lug, suitable links *d*, *e*, received in mortices *f*, *g* of end boards, and fastened therein, lug, wedge-shaped keys, substantially as shown and specified. 3rd. In combination with the above described panel A, B, of a portable fence, the locking-stake F having its upper end braced between the cross stay boards *c*, and horizontal board A, substantially as shown and specified.

No. 27,939. Waterproof Paint.

(*Peinture hydrofuge.*)

James Murray, Toronto, Ont., 5th November, 1887 ; 5 years.

Claim.—An improved waterproof paint, composed of petroleum, refuse of tar mixed with petroleum and resin oils, substantially in the manner and in the proportions herein specified.

No. 27,940. Valve Gear for Steam Engines.

(*Appareil de soupape pour machines à vapeur.*)

George S. Strong, New York, N. Y., U. S., 5th November, 1887 ; 5 years.

Claim.—1st. In a valve-gear for steam engines, the combination, with a fixed segment and a block adjustable thereon, of a radius-rod pivoted to said block, and eccentric *c* having its eccentric-lever fulcrumed to said radius-rod, and connected to the valve-rod, substantially as described. 2nd. In a valve-gear for steam engines, the combination, with a fixed segment and a block adjustable thereon, of a radius-rod pivoted to said block, the eccentric *c* having its eccentric-lever fulcrumed to said radius-rod, and two rock-arms which are connectedtogether and one of which is connected to the eccentric-lever, and the other of which is connected to the valve-rod, substantially as described. 3rd. In a valve-gear for steam engines, the combination, with a single eccentric and its eccentric strap, of the two levers 20, 21, one of which is rigidly secured to said eccentric-strap, and the other of which is pivoted to said strap or to the rigid lever, and both of which are fulcrumed, so that each receives a compound motion, one part of said motion serving to cause the lap and lead of the valve, while the other part effects the opening of the valve in addition to the lead, substantially as described. 4th. In a valve-gear for steam engines, the combination, with the two fixed segments having blocks adjustable thereon, of the radius-rods 18, 19 pivoted to said blocks, the eccentric *c* having the rigid eccentric-lever 20 fulcrumed to one of said radius-rods, and the pivoted lever 21 fulcrumed to the other of said radius-rods, one of said levers being connected to the induction valve or valves, and the other to the exhaust valve or valves, substantially as described. 5th. In a valve-gear for steam engines, the combination, with the two fixed segments having blocks adjustable thereon, of the radius-rods 18,19 pivoted to said blocks, the eccentric *c* having the rigid eccentric-lever 20 fulcrumed to one of said radius-rods, and the pivoted lever 21 fulcrumed to the other of said radius-rods, rock-arms 32, 36 which are connected together, and to one of said levers, and the induction valve or valves and rock-arms 33, 37 which are connected together, and to the other of said levers and the exhaust valve or valves, substantially as described. 6th. A valve-gear for locomotive engines, having its supporting frame-work carried by the axle-box of the engine, whereby the valve-gear partakes of the motion of the axle-box, and the relation of its parts is not disturbed by the movements of the main parts of the engine, substantially as described. 7th. In a valve-gear for locomotive engines, the combination, with the axle C, eccentric *c* and axle-box *w*, of the frame *d* mounted on the axle-box and supporting the various parts of the valve-gear, substantially as described.

No. 27,941. Heating Attachment for Lamp Chimneys. (*Fourneau-lampe.*)

Prentice Sargent, Boston, Mass., U.S., 5th November, 1887 ; 5 years.

Claim.—1st. The combination, with a lamp-chimney, of the heating-chamber E, the casing B, supporting-rods *f* and plate F, as and for the purpose set forth. 2nd. The combination of the heating-chamber E, interior chamber C, annular supporting flange D resting upon the bottom of chamber E and the casing B, as shown and described.

No. 27,942. Barbed Wire Fencing.

(*Clôture en fil de fer barbelé.*)

Homer Utler, Cuba, N.Y., U.S., 5th November, 1887 ; 5 years.

Claim.—A wire fence comprising a body composed of two or more strands, a series of rotatable barbs disposed at intervals on said body, and stops to keep said barbs properly separated, each of said stops consisting of a short piece of metal interlaced with the strands, substantially as set forth.

No. 27,943. Jack for Pegging, Heeling and Finishing Boots and Shoes. (*Machine à cheviller et finir les chaussure et poser les talons.*)

George Dorwart, Philadelphia, Penn., U. S., 5th November, 1887 ; 5 years.

Claim.—1st. The combination, with the hinged plate B1, the plate B attached thereto and revolvable thereon, and the post E of the spring-actuated pivoted standard H, the adjustable toe-rest H1 attached to said standard, and means substantially as described for actuating said standard. 2nd. The combination, with the hinged plate B2, the plate B attached thereto and revolvable thereon, and the post E provided with an adjustable pin E1, of the spring-actuated standard H pivoted to the plate B, provided with a head h^2, inclined downward in alignment with the said post, the toe-rest adjustably and detachably attached to said head, and means for elevating said standard, substantially as shown and described. 3rd. The combination, with the hinged plate B1, the plate B attached thereto and revolvable therein, and the post E provided with an adjustable pin E1, of the standard H pivoted to said plate B provided with an inwardly projecting arm *h* having a recess h^1, an inclined head h^2 carrying an adjustable toe-rest H1, a spring K connecting said standard and post, the hoist rod R2, and means for manipulating said rod and standard, substantially as shown and described. 4th. The combination, with the stand A, the plate B1 hinged to said stand provided with a lip e1, and the spring catch D1 adapted to engage said lip of the plate B, attached to the aforesaid plate B1 and revolvable thereon, the post E, provided with an adjustable pin B1, the spring-actuated standard H pivoted to said revolvable plate A having an inclined head and carrying an adjustable toe-rest H1, and means for elevating said standard, substantially as herein shown and described. 5th. The combination, with the stand A, th e plate B1 hinged to said stand provided with the lip e12 and the spring catch D1 adapted to engage said lip of the plate B attached to and adapted to revolve upon the plate B1, and post E attached to said revolvable plate B provided with an adjustable pin E1, the standard H pivoted to the plate B opposite said post provided with the recesses, base arm *h*, and the downwardly inclined head h^2, the toe-rest H1 adjustably secured to said head, the spring E uniting the said post and standard, and means for raising said standard, substantially as shown and described.

No. 27,944. Syphon Steam Pipe Heater.

(*Calorifère à vapeur.*)

George E. Dixon, Chicago, Ill., U.S., 5th November, 1887 ; 5 years.

Claim.—1st. In syphon steam pipe heaters, the loop pipes A, B two or more, each provided with a pipe E G C running transversely through them at their bottom ends, and the pipe at one side provided with the large live steam port *c*, and at the opposite side provided with the small lower port *a* for the return of the water of condensation through the steam supply pipe *w*, as specified. 2nd. The loops A, B, provided with the transverse pipes E, G, C at their lower ends, and the pipes E, G, C respectively at one end, provided with an annular tongue *b*, and at the other end with an annular groove *d*, and provided with webs *f*, *f*, in combination with the clamping bolts H, as specified.

No. 27,945. Apparatus for Lighting Railway Cars. (*Appareil d'éclairage pour chars de chemins de fer.*)

Edward J. Frost, Philadelphia, Penn., U. S., 5th November, 1887 ; 5 years.

Claim.—1st. In combination with a railway car which is provided with an air-brake system, the following parts, combined and arranged substantially in the manner set forth, to wit: a storage reservoir communicating with the supply-pipe of the air-brake system, a pipe leading from said storage reservoir to a pressure-reducer, a pipe leading from said pressure-reducer to a carbureter situated in the car roof, a shell or envelope surrounding said carbureter, a lamp situated beneath said carbureter and supplied therefrom, and a chimney adapted to carry off the products of combustion from said lamp, said chimney communicating with the interior of said shell or envelope, whereby the whole or a portion of the products of combustion are caused to pass around the exterior of said carbureter. 2nd. The carbureter J, constructed substantially as described, with a spiral passageway containing a quantity of absorbent material, and having an inlet-pipe I and exit-pipe L arranged as described, a pipe P which connects said inlet and exit pipes, an inlet N for charging said carbureter, and a blow-off pipe Q arranged, substantially in the manner set forth, for discharging the surplus hydrocarbon within the same.

No. 27,946. Boiler Attachment.

(*Disposition aux chaudières à vapeur.*)

Edward F. Barber, Ionia, Mich., U.S., 5th November, 1887 ; 5 years.

Claim.—1st. In combination with a boiler and an ash-pan therefor, a valve communicating with the steam-space and the water-space of

the boiler, a pipe connected to said valve extending into the ash-pan and provided with perforations, and means, substantially such as shown, for rocking said pipe upon its axis. 2nd. In combination with boiler A and ash-pan B, valve F and pipe J, arranged and operating substantially as described, perforated distributing-pipe L, located within the ash-pan and connected with pipe J, and a hand-lever Q, connected with said pipe L and adapted to rock the same. 3rd. In combination with boiler A and ash-pan B, valve F and pipe J, all arranged for operation substantially as shown, perforated pipe L provided with flanged tube N and arm S, a nut P adapted to fit upon the tube N and to connect the latter to the pipe J, and a hand-lever connected with the arm S, substantially as described. 4th. In combination with boiler A and ash-pan B, a two-way valve F adapted to receive steam or water from the boiler, a pipe J connected with said valve, a perforated pipe L connected with pipe J located within the ash-pan, and adapted to be rocked or oscillated upon its longitudinal axis, a hand-lever Q journalled upon the boiler, and a link or bar R connecting the hand-lever with the rocking-pipe. 5th. In combination with a boiler and ash-pan therefor, a supply-pipe communicating with the steam-space and the water-space of the boiler, and provided with a valve and a perforated pipe placed within the ash-pan, and adapted to be rotated upon its longitdinal axis, said perforated pipe being connected with the supply-pipe.

No. 27,947. Dust Collector.

(*Aspirateur de poussière.*)

The Knickerbocker Company, Jackson, Mich., (assignee of John M. Finch, Crockett, Cal.), U.S., 7th November, 1887; 5 years.

Claim.—1st. In a dust-collector, the combination, with a series of communicating separating-chambers arranged side by side, of a core extending through said chambers at unequal distances from the enclosing walls of said chambers, whereby enlargements are formed in said chambers on one side of the core, in which enlargements the air current is weakened, thereby permitting the solid particles to pass out of the air current, substantially as set forth. 2nd. In a dust-collector, the combination, with a suction fan, of a series of communicating separating-chambers, arranged side by side and connected with the eye of the fan, and a core extending through said chambers, the latter being constructed on one side of the core with enlargement through which the air current passes, and in which the solid matter is deposited, substantially as set forth.

No. 27,948. Process of Producing Metals of the Alkaline Earths and Apparatus therefor. (*Procedé de production des métaux des sols alkalins et appareil pour cet objet.*)

Richard Graetzel, (assignee of Adolph Graetzel), Hanover, Germany, 7th November, 1887; 5 years.

Claim.—1st. In combination with a melting and decomposing-pot *a*, and means for conducting an electric current into the substance contained therein, the insulator *g* communicating at its bottom end with the said pot, and through which an electrode is passed into the substance, substantially as and for the purpose described. 2nd. In the process of extracting a metal of an alkaline earth from a haloid compound thereof, by an apparatus consisting in a closed melting-pot, means for conducting an electric current into the compound contained in the pot, and an insulator *g* through which an electrode is passed, the introduction into the pot *a*, of a gas having either reducing qualities or which is neutral in respect to the metal to be extracted, substantially as and for the purpose described. 3rd. In the process of extracting a metal of an alkaline earth from a haloid compound thereof, by an apparatus comprising a melting-pot, means for conducting an electric current into the compound contained in the pot, and an insulator *g* through which an electrode is passed, the employment of regenerating-pieces *d* composed of the oxide of the same metal as that which is to be extracted and of carbon, and which are placed under the action of the current passing from one electrode to the other, substantially as and for the purpose set forth.

No. 27,949. Combined Stove Pipe Shelf and Dratt Regulator. (*Tablette et clé de tuyau de poêle combinés.*)

John A. Tees, Winnipeg, Man., (assignee of James Allingham, Mitchell, D.T., U.S.), 7th November, 1887: 5 years.

Claim.—1st. A combined stove-pipe shelf and draft regulator, comprising a casing formed of two frustra of cones united at their bases, each provided with a sleeve arranged therein and provided with an inclined slot, a sleeve arranged therein and provided with an operating-rod extending through said slot, and with suspension-straps and an internal cone, and a pipe-section connected to each other and supported by the suspension straps to the sleeve, substantially as specified. 2nd. The combination, with the frustra of cones C, C1, the former provided with a sleeve C_2 having an inclined slot C_7 of an interior sleeve E supporting an interior cone, and pipe-sections, said sleeve being provided with an operating rod D projecting through the slot C_7, substantially as specified. 3rd. In a draft regulator, the combination of a casing having a pipe-section provided with an inclined slot, a sleeve arranged in said section and having a rod passing through the slot, and a cone arranged within the casing and secured to the sleeve, substantially as specified. 4th. The combination of the sleeve E, the rod D and the slitted and apertured plate D_1, substantially as specified.

No. 27,950. Autographic Telegraph.

(*Télégraphe autographique.*)

The Writing Telegraph Company, New York, N. Y., (assignee of James H. Robertson, Rutherford, N. J.), U. S., 7th November, 1887; 5 years.

Claim—1st. The combination, with a stylus or holder moved by the hand of the operator, of a pile of carbon disks included in an electric circuit, and connections between said holder and pile so arranged that the movements of the former may cause a variation of pressure on said pile, and in consequence a variation in the resistance of the circuit and the strength of the current, substantially as described. 2nd. In the transmitting-instrument of an autographic telegraph, the combination, with a pile of carbon disks, of a lever arranged to exert a pressure on the same, a stylus or holder pivoted so as to move freely in a lateral direction, and adapted to be held and moved by the hand of the operator, and connections between said lever and holder so arranged that the movements of the stylus will cause a variation of pressure on said pile, substantially as described. 3rd. The combination, with a pile of carbon disks, of a lever arranged to exert a pressure on the same, a stylus or holder and a sliding rod and spring, substantially as described. 4th. The combination, with two piles of carbon disks of a stylus or holder pivoted to move freely in any lateral direction, and adapted to be held and moved by the hand of the operator, and connections between said holder and piles so arranged that the movements of the stylus will cause a variation of pressure on said piles, substantially as described. 5th. The combination, with two piles of carbon disks, of two levers arranged to exert a pressure on the same, a stylus or holder and connections between said levers and holder, substantially as described. 6th. The combination, with two piles of carbon disks, of two levers arranged to exert a pressure on the same, a stylus or holder, two sliding rods connected with said holder, and two springs connected said rods and levers, substantially as described. 7th. The combination, with two piles of carbon disks, of two levers arranged to exert a pressure on the same, a stylus or holder, two sliding rods pivoted to said holder and arranged to slide in pivoted bearings at substantially right angles to each other, and spring connecting said rods and levers, substantially as described 8th. The combination with the electromagnets of the receiving-instrument, of a stylus or holder moved by the hand of the operator, two piles of carbon disks included in the circuits with said electromagnets, and connections between said holder and piles so arranged that the movements of the former may cause a variation of pressure on said piles, and in consequence a variation in the resistance of the circuits and the strength of the current, substantially as described. 9th. The combination of the receiving-stylus, with an electromagnet, and a depending armature arranged with its end facing said magnet, and pivoted to swing over the same, substantially as described. 10th. The combination of the receiving-stylus, with an electromagnet, and a polarized armature pivoted to swing over and from one pole to the other of the said electromagnet, the latter being arranged below the free end of said armature, substantially as described. 11th. The combination of the receiving-stylus, with an electromagnet, a permanently magnetized standard, an armature polarized by induction from said standard, and pivoted to swing over and from one pole to the other of said electromagnet, the latter being arranged below the free end of said armature, substantially as described. 12th. The combination of the receiving-stylus, with two electromagnets arranged below the free ends of their armatures, two armatures pivoted to swing at right angles to each other over said magnets, and connected with the said stylus and retractile springs acting in opposition to the force of said magnets, substantially as described. 13th. The combination of the receiving-stylus, with two electromagnets, two polarized armatures pivoted to swing over said magnets from one pole to the other thereof, and connected with said stylus, and retractile springs acting in opposition to the force of said magnets, substantially as described 14th. The combination of the receiving-stylus with two electromagnets, two depending armatures pivoted to swing at right angles to each other over said magnets, one of said armatures carrying said stylus, and the other connected thereto, and retractile springs acting in opposition to the force of said magnets, substantially as described- 15th. The combination of the receiving stylus with two electromagnets, two polarized armatures pivoted to swing over the same from one pole to the other thereof, one of said armatures carrying said stylus, and the other connected thereto, and retractile springs acting in opposition to the force or said magnets, substantially as described. 16th. The combination of the receiving stylus with an electromagnet, and armature connected to and moved by said armature, a conducting-plate arranged below the same, and at such distance from the point thereof as to permit the passage of chemically prepared paper between said plate and stylus, without contact of the latter with said paper, and an induction-coil provided with a circuit-breaker and connected with said plate and stylus, substantially as described. 17th. The combination, with two electromagnets, and two armatures arranged to swing at right angles to each other, of a stylus connected with said armatures, a conducting-plate located below said stylus and at such a distance therefrom that chemically-prepared paper may pass between said plate and stylus without coming in contact with the latter, and an induction-coil provided with a circuit-breaker and connected with said plate and stylus, substantially as described. 18th. The combination, with an electromagnet and an armature carrying the receiving-stylus and pivoted to move above the surface of chemically-prepared paper without contact with the same, of a conducting-plate arranged below said stylus and paper, and an induction-coil and circuit-breaker, substantially as described. 19th. The combination, with two electromagnets, their armatures, and a receiving stylus connected therewith, of a conducting plate located below said stylus, a strip of chemically-prepared paper arranged to pass between said stylus and plate, and an induction-coil and circuit-breaker, substantially as described.

No. 27,951. Automatic Grain Weighing Scales. (*Balances automatiques pour les grains.*)

Cyrenius Dominy and Charles F. North, Englewood, Ill., U. S., 7th November, 1887; 5 years.

Claim.—1st. In an automatic weighing-machine, the combination, with a wheel or pulley, of a pair of grain-weighing buckets, suspended by a line or chain passing over said pulley, and a pair of scale-wheels until said scale-beams are raised, substantially as specified. 2nd. The combination of weighing-buckets B, B, with line or chain D, pulley E furnished with notches *e*, *e*, and bent scale-beams

F, F having pawls *f*, *f*, substantially as specified. 3rd. The combination of weighing buckets B,B,with chain D, sprocket-wheel E having notches *e*, *e*. one on each side face, bent scale-beams F, F pivoted at their lower ends to the frame of the machine and arranged one on each side of said wheel E, guards $f3$, $f3$ for the free ends of said scale-beams, and pawls *f*, *f* pivoted to said scale-beams, substantially as specified. 4th. The combination of weighing buckets B, B, with line or chain D, pulley E furnished with notches *e*, *e*, bent scale-beams F, F having pawls *f*, *f*, and register in operating arm K secured to the shafts of said pulley E, substantially as specified. 5th. In an automatic weighing-machine, the weighing bucket B furnished with an open-bottomed top-closed vertical valve shell or case having side openings near its base, and a vertically-moving piston inside said shell for opening and closing the openings in said shell, whereby the working parts of the valve are kept free from interference, substantially as specified. 6th. In an automatic weighing-machine, the combination, with a weighing bucket B furnished with an open-bottomed top-closed valve-shell or case having side openings near its base, of a valve piston inside said shell, and a fixed stop for moving said valve piston by the movement of said bucket, substantially as specified. 7th. The combination of a weighing bucket B, with open-bottomed top-closed valve-shell $b2$, having side openings $b3$, loaded valve piston $b4$, and adjustable fixed stop $b5$, substantially as specified. 8th. The combination of weighing bucket B, with open-bottomed top-closed valve-shell $b2$ having side openings $b3$, loaded valve piston $b4$, and adjustable fixed stop $b5$ furnished with yielding cushion $b6$, substantially as specified. 9th. The combination, with a pair of vertically-moving weighing buckets, and a chain for operating said buckets, of a pair of filling valves arranged above said buckets, and each consisting of a valve-shell or case having side openings near its base, and a valve piston working in said shell, substantially as specified. 10th. The combination, with a pair of vertically-moving weighing buckets, and a chain for operating said buckets, of a pair of filling valves arranged above said buckets, and each consisting of a valve-shell or case having side openings near its base, and a valve piston working in said shell, said bucket-chain being furnished with projections for operating said valve piston, substantially as specified. 11th. The combination, with a pair of vertically-moving weighing buckets, and a chain for operating said buckets, of a pair of filling-valves arranged above said buckets, and each consisting of a valve-shell or case having side openings near its base, and a valve piston working in said shell, said valve piston operating by its own gravity in one direction, and said chain being provided with projections for raising said valve pistons, and opening said valves when said buckets are in turn brought to their filling positions, substantially as specified. 12th. The combination, with weighing buckets B, B, of chain D, pulley E, hopper or grain-receptacle G, bottom G1 having grain-discharge openings $g1$, valve-shells H, H having ports *h*, *h* near their base and pistons H1, H1, said chain D being formed with projections *d*, *d* for operating said valve pistons, substantially as specified. 13th. The combination of weighing buckets B, B, chain D having projections *d*, *d*, pulley E having notches *e*, *e*, bent scale-beams F, F having pawls *f*, *f*, filling hopper or receptacle G, valve-shell or case H having side openings *h*, and pistons H1 operated by said projections on said chain, substantially as specified. 14th. The combination of weighing buckets B, B, chain D having projections *d*, *d*, pulley E having notches *e*, *e*, bent scale-beams F, F having pawls *f*, *f*, filling hopper or receptacle G, valve-shell or case H having side openings *h*, and pistions H1 operated by said projections on said chain, said buckets B, B, each having a discharge-valve consisting of a valve-shell or case $b2$ having side openings $b3$, and a piston $b4$, substantially as specified. 15th. The combination of weighing buckets B, B, chain D having projections *d*, *d*, pulley E having notches *e*, *e*, bent scale-beams F, F having pawls *f*, *f*, filling-hopper or receptacle G, valve-shell or case H having side openings *h*, and pistons H1 operated by said projections on said chain, said bucket B, B each having a discharge-valve consisting of a valve-shell or case $b2$ having side openings $b3$, and a piston $b4$ and a fixed stop $b5$ for raising said valve piston $b4$ by the descent of said bucket, substantially as specified.

No. 27,952. Tubular Lantern.

(*Lanterne tubulaire.*)

W. C, Whitney, Newport, Vt., U.S., (assignee of Charles E. Kennedy, Beebe Plain, Que.), 7th November, 1887; 5 years.

Claim.—1st. In a tubular lantern, the combination, with the barrel B carrying and holding the globe of a journal neck *b*, *b*, short hinge-barrel C free to turn upon said neck, the bracket *d*, cover D, tube E1 and hot air chamber E, substantially as set forth. 2nd. In a tubular lartern, the combination of the hinge-barrel B, neck *b*, *b*, short barrel C, bracket *d* and cover D, substantially as set forth. 3rd. In a tubular lantern, the combination of th etube A11, hinge-barrel B, hooked-spring F and catch F1, substantially as set forth. 4th. In a tubular lantern, the combination of the tube A11, hinge-barrel B having neck *b*, *b*, short barrel C, cover D connected to hinge C, hot air chamber E, short open tube E1, spring F and catch F1, substantially as set forth. 5th. In a tubular lantern, the combination of the hot air chamber E, downward projecting open tube E1, cover D, bracket *d* and short hinge barrel C, substantially as set forth.

No. 27,953. Hand Power Drilling Machine.

(*Machine à percer à la main.*)

Riverious P. Elmore New York, N. Y., (co-inventor with Jacob O. Ebbets, Milwaukee, Wis.), and George G. Tillotson, Stroudsburgh, Penn., U.S., 7th November, 1887; 5 years.

Claim.—1st. In a rock-drilling machine, in combination, an oscillating hammer, a catch or spring holder so fitted in the frame as to occupy two positions in one locked behind the hammer, and in the other out of the path of the same, and a spring held between the catch and the hammer when the catch is in its locked position, substantially as set forth. 2nd. In a rock-drilling machine having a longitudinally moving drill holder, and a feeding screw parallel therewith, the combination, with the drill-holder and feeding screw, of a slide actuated by the drill-holder, a ratchet wheel surrounding and provided with means for imparting rotary motion to the screw, a transverse slide, and feed pawl arranged to act on the ratchet wheel, and a connection between the longitudinal and transverse slides whereby they are caused to move in unison, substantially as and for the purposes set forth. 3rd. In combination, the hammer *i*, the spring *k*, the L-catch *l* and the rear end of the carriage *b*, provided with a square socket hole, substantially as and for the purpose set forth. 4th. The double handle formed of two pieces, in combination with locking teeth formed on their adjacent connecting faces, one of the pieces having said locking teeth on both of its sides and connecting bolts, substantially as and for the purpose set forth. 5th. In combination, the hollow drill-holder *f*, the chuck $f1$ secured to its front end, the collar $f2$ at its rear end, and the guide sleeve *h* provided with the elastic washer *h* detachably fitted in its rear end, substantially as and for the purpose set forth 6th. The combination, with the main frame *a* and screw *c*, of the carriage *b*, sliding half nut *n* fitted in guides at the rear side of the carriage, and the handle $n1$ located at the front of the carriage, and provided with a crank pin acting in a slot in the nut, substantially as and for the purpose set forth. 7th. In combination, the drill-holder *f*, the slide *q*, the bell-crank $q1$, the slide $o1$, the pawl *o*, the ratchet wheel *p* and the screw *c*, substantially as and for the purpose set forth. 8th. The combination, with the main frame *a* and grooved screw *c*, of the carriage *b*, the ratchet wheel *p* having a spline $p1$, the pawl *o*. the slide $o1$, the bell crank lever $q1$, the forked slide *q* and the circumferentially grooved drill-holder, substantially as and for the purpose set forth. 9th. In combination, the spring *k*, the L-catch *l*, the hammer *i* pivoted to an arm of the frame, the latch *s* pivoted in the hammer shaft, the links $i2$, $i3$ sliding on the belt $i8$, the forked lever *i* joined to each of the links $i2$, $i3$, the connecting link $i6$ and the handle *j*, substantially as and for the purpose set forth. 10th. In combination, the hollow drill-holder *f*, the washer $f1$, the toggle links $i4$, $i5$, the slotted link $i7$, the bolt $i9$, the forked lever ,1, the links $i2$, $i3$ actuating the hammer, the connecting link $i6$ and the handle *j*, substantially as set forth.

No. 27,954. Portable House. (*Maison portative.*)

William M. Ducker, New York, N.Y., U.S., 10th November, 1887; 15 years.

Claim.—1st. A portable house, consisting of a central longitudinal section A, floor sections M and side sections B, C, in combination with suitable end sections, ridge pole N and supports and roof D, substantially as described and shown. 2nd. In a portable house, a shaft, as A, provided with suitable locking devices to support the floor centrally, substantially as described and shown. 3rd. In a sectional house, a central longitudinal part A adapted to support the centrally-disposed ends of the floor sections, in combination with floor sections, provided with suitable devices, as the feet $m3$, adapted to adjust the outer portions of the sections to the inequalities of the ground, substantially as described. 4th. In a portable house, a floor consisting of sections M, M, provided with key pieces Z, Z, adapted to permit the sections M, M to be lifted up out of place independently, substantially as described and shown. 5th. In a portable house, the floor sections *M*, provided with the lip $m1$ and adjustable feet $M3$, substantially as described and showu. 6th. In a portable house, the roof, as D, ridge pole N, supports P, P and rafters O, O, in combination with the trays B, C and suitable end sections E, F, G, substantially as described. 7th. In a portable house, consisting of suitable sides and roof, the end sections E, E, F, F and roof sections G, G, substantially as described and shown. 8th. In a portable house, the door section E, tongue pieces *d*, *d* and sliding door H, substantially as described and shown. 9th. In a portable house, the trays B, C adapted to fold together and inclose a suitable packing space, substantially as described and shown. 10th. In a portable house, the tray sections C, with window openings therein, in combination with a suitable shutter C2 to swing outwardly and glazed sash C3 to swing inwardly, substantially as described. 11th. In a portable house, the tray, as B, provided with a bed adjustable thereto, and adapted to fold into the same, substantially as described and shown. 12th. In a portable house, the tray, as C, provided with the hinged table I, adapted to fold into such tray, substantially as described and shown. 13th. In a portable house, the sections A, B, C, E, F, G and M, in combination with the plates Y having dovetailed slots Y1, and plates Z, having corresponding dovetail projections Z1, substantially as described and shown.

No. 27,955. Carbon Machine.

(*Machine à pointes de charbon.*)

John T. Lister, Cleveland, Ohio, U. S., 10th November, 1887; 5 years.

Claim.—1st. The combination in a carbon machine, of a press, a furnace and a mould, with a carrying support for the mould between the press and the furnace, whereby the mould is conveyed from the furnace to the press and back again to the furnace, substantially as set forth. 2nd, The combination, in a carbon machine, of a furnace having a passage-way for the mould, with a press and a mold for the carbons constructed to be carried through the furnace, whereby the carbon dust is warmed as the mould passes through the furnace, substantially as set forth. 3rd. In a carbon machine, a press, a furnace and a carrying support for the mould between said parts, in combination with a mould and a device for filling the mould, substantially as set forth. 4th. The combination, in a carbon machine, of a device for filling the mould, a furnace in which the carbon dust is heated in the mould, with said mould and a press, substantially as set forth. 5th. In a carbon machine, a furnace, having an open passage-way extending through it, and constructed to heat the carbon dust in the mould, while said mould passes through the furnace, substantially as set forth. 6th. In a carbon machine, a device for filling the mould, a furnace having a passage-way through it, and a press, in combination with a support connecting said filling device, furnace and press in a circuit, whereby the mould is conveyed round from one to the other in turn, substantially as set forth. 7th. In a carbon machine, a stationary mould-filling device, and a furnace constructed with a passage-way through it for the mould, in combi-

nation with the mould and carrying mechanism therefor between the filling device and the furnace, substantially as set forth. 8th. In a carbon machine, a mould, in combination with a furnace, having an open way for the mould, and a support for the mould extending through said way, whereby the mould is conducted through the furnace, substantially as set forth. 9th. In a carbon machine, a press, a turn-table, provided with vertical openings at regular intervals extending through the same, and mechanism, whereby the turn-table is moved and automatically stopped when said openings register with the press, substantially as set forth. 10th. In a carbon machine, a turn-table having a series of openings, and moulds over said openings, in combination with a press constructed to enter said openings as the table is turned, and engage the moulds and press the carbons, as set forth. 11th. In a carbon machine, a turn-table and gearing, substantially as described, whereby the table is turned and automatically stopped, said table provided with open spaces and moulds, in combination with a press through which said table passes and carries the moulds, substantially as set forth. 12th. In a carbon machine, a turn-table, an outside track, the ends of which terminate at the turn-table, and a furnace located in the line of the said track in combination with a press, substantially as set forth. 13th. A track and a filling device, and a furnace arranged along said track, in combination with a turn-table and press, substantially as set forth. 14th. The method of separating carbons at their seams, which consists in removing the sheet or series of united carbons bodily from the mould before they have cooled, and while in this state cutting the webs, substantially as set forth. 15th. In a carbon machine, a series of discs arranged on a shaft with equal spaces between them, in combination with a carbon holder, having grooves corresponding to the spaces between the discs, substantially as set forth. 16th. In a carbon machine, a carbon holder having grooves corresponding to the grooves in the mould, and constructed to hold a sheet of uncut carbons, in combination with a series of cutters to sever the carbon webs, substantially as set forth. 17th. In a carbon machine, a filling device for the mould having a receptacle through which the carbon dust is sifted, a feeder for the dust, a series of channels through which the carbon dust enters the mould, and automatic mechanism whereby the flow of the dust to the mould is controlled, substantially as set forth. 18th. In a carbon machine, a filling device for the mould, a screen, a worm to feed the dust and channels through which the dust is fed to the mould, in combination with the mould and mechanism for automatically cutting off and turning on the flow of dust, substantially as set forth. 19th. In a carbon machine, a grooved transferring device for taking the sheet of carbons from the mould, in combination with a support for said device, and a series of circular cutters to sever the carbon webs, substantially as set forth. 20th. In combination, a press, a furnace for heating the carbon dust in the mould, preparatory to pressing, a stationary dust-feeding device, a carrying support for the mould connecting the press, the furnace and the filling device, and a mould, substantially as set forth. 21st. In a carbon machine, a filling device for the mould, having a receptacle for the carbon dust, a rotary feeder, a sifter and an automatic shut-off to stop the flow of the dust, substantially as set forth. 22nd. In a carbon machine, a hydraulic press having a single water passage leading below the piston therein, a reversing valve in said passage, and mechanism connecting the press and the valve, whereby the valve is automatically reversed, substantially as set forth. 23rd. In a carbon machine, a mould and a carrying support therefor, in combination with a cutter to remove the carbon webs, and a transferring device to transfer the sheet of carbons from the mould to the cutter, substantially as set forth.

No. 27,956. Machine for Rolling the Threads on Screws and Bolts. (*Machine à fileter les vis et les boulons.*)

Hayward A. Harvey, Orange, N. J., U. S., 10th November, 1887; 5 years.

Claim.—1st. In a machine for rolling screw threads, the combination, substantially as herein set forth, of two reciprocating dies having their opposed faces suitably ribbed, means for giving to one of said dies a prescribed range of slow endwise movement in one direction, and means for giving in the same time to the other, of the said dies, two or more relatively rapid reciprocating movements for the purpose of rolling a screw thread upon the body of a blank introduced into the space between the two dies. 2nd. In a machine for rolling screw threads, the combination, substantially as herein set forth, of two reciproceating dies having their opposed faces suitably ribbed, means for guiding the movements of said dies in planes slightly diagonal to each other, means for giving to one of said dies a prescribed range of slow endwise movement in one direction, means for giving in the same time to the other of the said dies, two or more relatively rapid reciprocating movements, and means for feeding screw-blanks into the space between the two dies, whereby spiral grooves are impressed in the body of the blank, and gradually deepened during the backward and forward movements of the quick-moving die, as the width of the space between the faces of the two dies gradually diminishes. 3rd. The combination, substantially as and for the purposes set forth, of the reciprocating die D, means for guiding and means for imparting a prescribed range of reciprocating motion to the die block or carriage carrying the die D, the die *f*, the carriage F, means for guiding the movement of the carriage F in a path slightly diagonal to the face of the die *f*, means for imparting a slow forward movement to the carriage F, and means for imparting a quick backward movement thereto, and the adjustable abutment screw J_3 for limiting the range of backward movement of the carriage F. 4th. In combination with the reciprocating dies D and *f*, the adjusting plate G for regulating relatively to the plane of motion of the die D, the position of the diagonal guide for the carriage F carrying the die *f*. 5th. The combination, substantially as and for the purposes set forth, of the reciprocating die D, the carriage F carrying the die *f*, the cam *e*, the arm e^2 engaging the cam *e* and connected with the carriage F and the retracting spring J. 6th. The combination, substantially as set forth, of the reciprocating die *f*, the die D, the carriage C_1, the pitman C, the radially-slotted crank-arm B_5 and the adjustable crank-pin B^6. 7th. The combination, substantially as set forth, of the reciprocating dies D and *f* the transferer L, the ways K_1 for supporting a screw-blank in front of the end of the transferer and in alignment with the space between the space of the dies and means for at the proper time imparting endwise movement to the transferrer in a path parallel, or nearly parallel, to the plane of movement of the dies, for the purpose of transferring the blank sidewise to the delivery end K_2 of the ways K_1, and presenting it in position to be caught between the corners of the dies and rolled into the space between the dies. 8th. The combination, substantially as and for the purposes set forth, of the reciprocating dies D and *f*, the inclined ways K, the horisontal ways K_1, the transferrer L, the cam T and the retracting spring M.

No. 27,957. Lamp Burner. (*Bec de Lampe.*)

Cabin H. Maish, Carson, Nev., U.S.. 10th November, 1887; 5 years.

Claim.—As an improvement in lamp burners, the wick tube, having rounded corners, the wick and devices for lowering said wick and also raising it, in combination with an outer case placed upon the wick tube extending above to form a continuation of the same, and having a rectangular cross-section, and a hinged extinguishing flap automatically operated by a spring attached to the case, its free end acting upon an arm projecting from the flap, all arranged to give a supply of air to the flame at the corners of the case, and to extinguish said flame when the wick is turned down in the manner substantially as shown and described.

No. 27,958. Button Fastener. (*Queue de bouton.*)

Albert Hall, Brooklyn, N.Y., U.S., 17th November, 1887: 5 years.

Claim.—1st. A button provided with a sliding fastening-hook, which has its upturned pointed end adjacent to the under side of the button, substantially as herein shown and described. 2nd. A button provided with a sliding fastening-hook on its bottom, the said hook having one end turned up and pointed, which point is adjacent to the underside of the button, and the other end of the hook being provided with a widened part to give the hook a good and firm bearing on the underside of the button, substantially as herein shown and described. 3rd. The combination, with a button provided in its bottom with a slot extending from the rim beyond the centre, of a fastening-hook passed through said slot, and having a widened part formed on its inner end, which widened part is mounted to slide on the slotted bottom within the button, the outer end of the hook being turned up and pointed, substantially as herein shown and described. 4th. The combination, with a button having a slot in its bottom extending from the rim beyond the centre, and provided with a projection on the underside of the top-plate at the centre, of a fastening-hook passed through the slot in the bottom and provided at its inner end, with a widened part which is mounted to slide between the top and bottom plates of the button, substantially as herein shown and described.

No. 27,959. Process of Preparing Cereals.

(*Procédé de préparation des céréales.*)

Joseph F. Gent, Columbus, Ill., U.S., 10th November, 1887; 15 years.

Claim.—1st. The process of producing flaked cereals, consisting in first crushing or grinding the kernels in a dry state, and separating the hulls and impurities therefrom, second, steaming the purified and granular material, and third, in subjecting the steamed material to successive and progressive comparison and heating, substantially as described. 2nd. As an improved article of manufacture, the herein-described product from corn, consisting of compressed attenuated flakes of purified corn material having large surfaces, for the purpose set forth.

No. 27,960. Planing Machine.

(*Machine à raboter.*)

Joseph A. Saucier, Holland, Vt., U. S., 10th November, 1887; 5 years.

Claim.—1st. In a planer, the combination, with the cross-bar q^2 of the main frame of the flanged standard o_1 having bearings for the spindle of an edge cutter, the flanged clamp p_1 bolted to the standard o_1 above and below the bar q^2, and the screw-shaft *r* passing through standard o_1 below the said clamp, substantially as set forth. 2nd. In a planing machine, the frame having the slots or guides for the sliding boxes of the feed rolls, the lower ends of said slots being inclined, as and for the purpose specified. 3rd. In a planer, a bed or table, feed rolls supported thereby gearing for driving said feed rolls, and devices, substantially as described, whereby said table feed rolls and gearing may be inclined relatively to a cutter head revolving in a constant plane, as set forth. 4th. In a planing machine, the combination of main frame, cutter head, upper feed rolls, bed or table adjustable in guides in the frame, and lower feed rolls and gearing for driving them supported by the said table, substantially as set forth. 5th. In a planing machine, the combination of the supporting frame, the movable table, slides upon each side engaging with said table and screws for supporting and operating such slides independently, substantially as described. 6th. The combination of the supporting frame, the movable table, slides engaging with the edges of said table on each side, the journalled screws supporting and independently operating said slides, and having bevel gears and the shafts *t* having bevel gears engaging with the bevel gears of the said screws, substantially as set forth.

No. 27,961. Dynamo-Electric Machine.

(*Machine dynamo-électrique.*)

The Westinghouse Electric Company, Pittsburgh, (assignee of George Westinghouse, jr., Henry M. Billesby, Pittsburgh, Oliver B. Shallenberger, Rochester, Albert Schmid, Allegheny, and Bernard Hartley, Pittsburgh, Penn., U.S., 10th November, 1887 5 years.

Claim.—1st. The combination, substantially as described, with the armature, of an electric machine having opening extending through it of ventilating plates at the respective ends of the armature, the

plate at one end being separated from the armature through its outer portion, and the remaining plate being open at its centre and separated from the armature through its central portion. 2nd. In an electric machine, a rotating armature having one or more axial openings, in combination with end plates, one of said plates having an opening to the armature openings through its central portion, and the other having an opening to the armature openings from its outer edge, substantially as described. 3rd. In an electric machine, the combination, with a rotating armature having axial openings through it, of an end plate covering the openings and radiating ribs on the inner surface of said plate forming with said plate radial continuations of said openings. 4th. In an electric machine, the combination, with a revolving armature-core and coils of wire applied thereto, of a sheet of mica or other insulating material between the wire and the core, and an insulating coating surrounding the coils, substantially as described. 5th. An armature for electric machines cylindrical in form, having lugs of non-magnetic material upon its outer surface, and clips or plates of non-magnetic material at the ends of said lugs, and wire wound around said clips and across the face of the armature filling the spaces between the lugs, substantially as described. 6th. An armature for electric machines, composed of thin sheets of soft iron magnetically separated from each other, end-plates of soft-iron clamping said sheets together, and rings of fibre or other non-magnetic material surrounding the said plates and flush with the periphery of the armature, substantially as described. 7th. In an electric machine, a cylindrical armature having its coils wound upon its face and down upon its ends, overhanging clips at the ends for holding the coils in position constructed in two portions, the overhanging portions being removable after the coils are in position, and plates of non-conducting material covering the wire upon the ends of the armature. 8th. An armature for electric machines constructed of thin plates of soft-iron placed side by side, each plate being constructed with ventilating holes, substantially as described, the holes in adjacent plates being of different sizes. 9th. In an electric machine, an armature-core constructed with axial ventilating openings having end plates constructed with corresponding openings of less cross-section. 10th. The combination, substantially as hereinbefore set forth, with the armature of an electric generator, of a frame for the field-magnet consisting of two castings bolted together and cores of wrought iron bolted to said castings and forming a cylinder around said armature.

No. 27,962. Armature of Electric Machines.

(*Armure de machine électrique.*)

The Westinghouse Electric Company, Pittsburgh, (assignee of Oliver B. Shallenberger, Rochester, Penn., U.S., 10th November, 1887; 5 years.

Claim.—1st. In an electric generator, the combination, with the field magnets, of an armature having its alternate coils wound in opposite directions, and the outer end of each coil connected with the inner of the succeeding coil. 2nd. In an electric generator, an armature having its alternate coils wound in reverse directions, and the inner ends of each coil connected with the outer end of the succeeding coil throughout the entire series of armature coils or any portion of such series. 3rd. In an electric generator, a series of armature coils, the alternate coils being wound in reverse directions, and the inner end of each coil connected with the outer end of the succeeding coil, conductors leading from points directly opposite each other in the length of the continuous conductor forming the said series of armature coils, and collecting plates with which said conductors are electrically connected. 4th. In an electric generator, an armature wound with two series of coils arranged in multiple arc, the terminals delivering like currents from each series being united at points approximately diametrically opposite each other upon the armature, substantially as described. 5th. In an electric generator, the combination, with a multiple field-magnet and its polar projections, of an armature revolving within said field-magnet having its conductor formed with coils upon its periphery of greater breadth than said polar projections, substantially as described.

No. 27,963. Commutator for Electric Machines. (*Commutateur de machine électrique.*)

The Westinghouse Electric Company, Pittsburgh, (assignee of Oliver B. Shallenberger, Rochester), Penn., U.S., 10th November, 1887; 5 years.

Claim.—1st. The combination, with the collecting rings of an alternate-current generator, of contact-rings receiving a portion of the current therefrom, a rectifying commutator having its plates or sections connected alternately with the respective contact rings, and contact brushes receiving a continuous current from the commutator. 2nd. The combination, with the shaft and collecting rings, of an electric generator, said shaft having a shoulder formed upon it of a commutator clamped against said shoulder and two contact-rings secured to the respective sides of said commutator. 3rd. The combination of a rectifying commutator, the shaft of an electric machine carrying the same, two contact-rings respectively placed upon opposite sides of the commutator flanges formed upon said rings adjacent to said commutator, and screws for clamping and connecting the respective flanges to the alternate plates of the commutator. 4th. The combination, with the shaft of an electric generator, of two contact-rings, a commutator, contact-brushes for said ring and commutator, and a support carrying all of said brushes which is adjustable in its angular position with reference to said shaft.

No. 27,964. Electric Converter and Box for Same. (*Inducteur et enveloppe d'inducteur électrique.*)

The Westinghouse Electric Company, Pittsburgh, (assignee of William Stanley, jr., Great Barrington, Mass., Henry M. Byllesby, Pittsburgh, Albert Schmid, Allegheny, and Oliver B. Shallenberger, Rochester, Penn., U.S., 10th November, 1887; 5 years.

Claim.—1st. A core composed of E-shaped plates, electrically and magnetically separated from each other, and symmetrically disposed about a coiled conductor, as set forth. 2nd. The combination, with a coiled conductor, of a mass of soft iron composed of detached plates, each plate being provided with three projecting tongues, one situated within and the other without the coil, as set forth. 3rd. The combination of the primary and secondary coils of a converter, and a core composed of thin flexible plates of soft iron, each formed with two holes, the metal about each hole being cut open for receiving the coils, substantially as described. 4th. Metal plates for forming cores for electric converters, constructed with two openings, the metal around each opening being cut apart. 5th. An electric converter consisting of the primary and secondary coils, and a series of soft iron plates, having holes for receiving the respective sides of the coils, the metal surrounding the holes being cut apart upon opposite sides in the alternate plates. 6th. An electric converter consisting of primary and secondary coils having a core composed of thin plates of soft iron, each plate having two holes, the metal about each hole being cut open for receiving the coils and non-magnetic material between alternate plates. 7th. A core for electric converters consisting of thin plates of soft iron, each having two openings and each two plates being magnetically separated from the adjacent plates but in magnetic contact with each other. 8th. An electric converter consisting of primary and secondary coils, and a core of soft iron plates, each constructed with two openings for receiving the coils, the metal about each opening being cut through, and the central tongues thus formed inserted within said coils from opposite sides and sheets of non-magnetic material between the alternate plates. 9th. The combination, with the primary and secondary coils, of a converter separately wound and covered with insulating material, of plates of non-conducting material between said coils, strips of non-conducting material extending along the sides of the coils, and a core of soft iron surrounding the coils leaving air-spaces between said strips. 10th. In an electric converter, the combination, with the primary and secondary coils separately wound, of plates of insulating material between the coils, and strips of insulating material extending along the sides of the coils and separating the same from the surrounding core, substantially as described. 11th. The combination, in an electric converter, of a core built up of plates or sheets of soft iron, magnetically insulated from each other, and having rectangular openings, primary and secondary coils within said openings, and strips of insulating substance separating the coils from the core, substantially as described. 12th. The combination, with the core of an electric converter, of primary and secondary coils therefor separately wound and covered with separate insulation, substantially as described. 13th. In an electric converter primary and secondary coils separately wound, and a covering of insulating material applied to each coil independently of the other, substantially as described. 14th. The combination of the primary and secondary coils of an electric converter, said coils being separately wound and separately insulated and placed side by side and a core of soft iron to which the coils are applied. 15th. A converter-box constructed in two sections, the one provided with means for securing it to supports, and the other having two separate compartments for receiving the primary and secondary circuit controlling devices. 16th. A converter box constructed in two parts, the one being provided with separate compartments formed by lateral webs, con-conducting plates within said compartments and circuit-controlling devices carried upon said plates. 17th. The combination, with a box for containing an electric converter, of two independent compartments integral therewith for receiving the primary and secondary terminals respectively, non-conducting plates with said compartments, independent circuit-controlling devices for the respective primary and the respective secondary conductors carried by said plates, and non-conducting plates between the respective circuit-controlling devices in each compartment. 18th. The combination, with a box for containing an electric converter, of independent compartments integral therewith for containing the primary and secondary circuit, controlling devices, transparent plates closing said compartments, and protecting discs outside said plates. 19th. The combination, with an electric converter of supports for the primary and secondary conductors respectively, and a box containing the converter secured at one end to the support of the primary conductors, and at the other end to the support of the secondary conductors. 20th. The combination, with an electric converter of supports for the primary and secondary conductors respectively, a box containing the converter secured at one end to the support of the primary conductors, and at the other end to the support of the secondary conductors, a compartment for receiving the terminals, of the primary coils, of the converter, a second compartment for receiving the terminals of the secondary coils, of the converter, and openings at the bottom of the respective compartments for receiving conductors leading to the primary and secondary coils respectively.

No. 27,965. Box for Electric Converter.

(*Enveloppe d'inducteur électrique.*)

The Westinghouse Electric Company (assignee of George Westinghouse, Jr.), Pittsburgh, Penn., U. S., 10th November, 1887; 5 years.

Claim.—1st. The combination of primary and secondary conductors, a core of soft iron plates, circular in form, each plate having two openings for receiving the coils, the metal about each opening being cut apart, substantially as described, and a cylindrical enclosing case for the same. 2nd. An electric converter, consisting of primary and secondary coils, a core of circular soft iron plates or discs, and an enclosing tube of soft iron. 3rd. An electric converter, consisting of primary and secondary coils, a core of soft iron cylindrical in form and composed of thin plates, in combination with a lamp-post of iron having a cylindrical opening containing the same and in magnetic connection therewith. 4th. An electric converter, consisting of primary and secondary coils, and a core composed of soft iron plates, and a solid back piece common to all the plates. 5th. An electric converter, consisting of primary and secondary coils, and a core, consisting of laminae of soft iron, magnetically separated through the greater portion of their surfaces and magnetically united at their edges. 6th. An electric converter, consisting of the combination of

primary and secondary conductors, and a core of soft-iron plates and an enclosing case of soft iron. 7th. The combination, with the primary and secondary coils, of a converter and a core of soft iron to which they are applied, of a soft iron enclosing case for the same.

No. 27,966. Volt Meter. (*Voltomêtre.*)

The Westinghouse Electric Company, Pittsburgh (assignee of Philip Lange, Pittsburgh, Oliver B. Shallenberger, Rochester), Penn., U.S., 10th November, 1887; 5 years.

Claim.—1st. In an electric meter, the combination, with the coil of the meter having a comparatively low resistance, of a series of incandescent electric lamps having a relatively high resistance, and connected in series therewith and reducing the error due to the change in the resistance of the coil. 2nd. The combination, in an electric meter, of the indicating device, the coil for actuating the same, connected in multiple arc with the translating devices, and one or more incandescent electric lamps of relatively high resistance connected in series therewith, reducing the error due to the change in the resistance of the coil. 3rd. The combination of a conductor, two branch circuits, two coils respectively included therein, an indicator acted upon by said coils in opposite directions, a carbon resistance in one of said branches, varied as to its value by the current traversing the same, and an incandescent electric lamp in the conductor. 4th. The combination, with a main line and translating devices included in the main line varying the amount of current traversing the same, of an electrical indicator included in multiple arc-circuit with the translating devices, consisting of opposing coils, an index acted upon thereby, branch circuits respectively including said coils, a variable resistance included in one branch circuit, and a carbon resistance in series with the indicator. 5th. The combination, with a conductor and two branch circuits, of a volt meter consisting of an indicator, two coils respectively included in the branch circuits of said conductor, cores therefor carried by the support of said indicator, and means for counterbalancing the weight of said cores. 6th. The combination, with a conductor, having two branch circuits, of a volt-meter, consisting of a resistance included in one branch, and one or more translating devices in the other branch, and two coils in each branch respectively provided with cores, the two coils in one branch, acting in opposition to the two coils in the other branch, substantially as described. The combination, substantially as described, of a main line having two branches, a resistance in one branch, a translating device in the other branch, two coils respectively included in said branches and placed at an angle to each other, a core extending into both of said coils, and a central support for said core.

No. 27,967. Ammeter. (*Compteur électrique.*)

The Westinghouse Electric Company (assignee of Philip Lange), Pittsburgh, Penn., U.S., 10th November, 1887; 5 years.

Claim.—1st. An electric meter consisting of a movable core or armature, a coil included in the main line, into which said core is drawn a greater or less distance, according to the attraction exerted upon the core, a support for said core, a toothed segment moved by said support, an index hand geared to said segment, and an adjustable counterpoise for balancing the weight of said core supported from the axis of said segment. 2nd. The combination of an indicating arm, a scale for the same, a movable core, a coil included in the main line circuit and acting upon said core, a toothed segment moved by said core, an adjustable counterpoise for the same supported from the axis of said segment, an index geared to said segment, and a notch spring applied to the axis of said index for taking up the lost motion, substantially as described. 3rd. An electric meter for alternate electric currents, consisting of a magnetizing coil, a core movable therein, composed of magnetically separated soft iron wire, and an indicator operated by the movements of the core. 4th. In an electric meter for alternating currents, the combination of a magnetizing coil, a core moving therein, consisting of a convolute of non-conducting material, covered by wires of soft iron, and an indicator operated by the movements of the core. 5th. A core, for electric magnetic apparatus, consisting of a convolute of non-conducting material covered by wires of soft iron. 6th. A core for electro-magnetic apparatus, consisting of a sheet of paper, or other non-magnetic material, covered with soft iron wires and wrapped upon itself, substantially as described. 7th. As an article of manufacture, a sheet of non-magnetic, non-conducting material, covered upon one side by wires of soft iron, substantially as described. 8th. The hereinbefore described method of forming cores for electro-magnets, which consists in winding wire upon a non-conducting sheet, cutting the wires across their lengths and wrapping the sheet upon itself, substantially as set forth.

No. 27,968. Electrical Pressure Indicator.

(*Indicateur de la pression électrique.*)

The Westinghouse Electric Company, Pittsburgh (assignee of Oliver B. Shallenberger, Rochester), Penn., U. S., 10th November, 1887; 5 years.

Claim.—1st. The combination, with a source of electricity, of two opposing coils, one connected in a shunt, and the other in a series with the work circuit, and an indicator affected by the currents traversing the coils, substantially as described. 2nd. An indicator for electric circuits, consisting of two coils, one connected in shunt upon, and the other in series with the work-circuit, one of said coils being adjusted to secure a predetermined percent greater effect than the other. 3rd. An electric indicator, consisting of two coils opposing each other, an indicator acted upon thereby, an electric circuit-receiving currents by induction, having a difference of potential dependent upon the difference of potential at the terminals of the source of electricity, and a second circuit-receiving currents dependent upon the current in the work-circuit, substantially as described. 4th. The combination, with an electric converter, having its primary coil connected in circuit with the main line, and its secondary circuit adjustable with reference to its length, of a coil of insulated wire connected in the secondary circuit, a second coil opposed thereto, means for supplying said second coil with currents proportional to the difference of potential at the terminals of the source, and means actuated by said opposed coils for indicating the electromotive force on the work circuit. 5th. The combination, with the source of electricity, and a work-circuit supplied therefrom, of a converter, having its primary coil connected with said source, a solenoid adjustable with reference to its length, connected in the circuit of the secondary coil, a second solenoid acting in opposition thereto, a converter, the secondary coil of which includes said second solenoid in its circuit, and conductors connecting the primary coil of the converter, with the respective terminals of the source of electricity. 6th. An electric indicator, consisting of a converter, the primary coil of which is designed to be connected in an electric circuit, means for adjusting the length of the secondary coils, a solenoid, adjustable with reference to its length included in the secondary circuit, a second solenoid acting in opposition to the first-named solenoid, a converter, including the second solenoid in its secondary circuit, and an indicator affected by currents traversing said solenoids. 7th. An electric indicator, consisting of a converter, the primary coil of which is designed to be connected in an electric circuit, means for adjusting the length of the secondary coil, a solenoid included in the secondary circuit, a second solenoid acting in opposition to the first-named solenoid, and an indicator affected by currents traversing said solenoids. 8th. The combination, with a source of electricity, and conductors conveying currents therefrom, of converters reducing the potential of the currents, a secondary circuit receiving the currents of reduced potential translating devices included in said secondary circuit, a converter increasing the potential received from the said second circuit, conductors extending therefrom to a distant point, and an indicator operated by the electrical energy conveyed thereby. 9th. The combination, with a system of electrical distribution, employing alternating, undulatory or pulsatory currents, of a pressure-reducing device connected with the translating circuit, an indicating device located at a point distant therefrom, a pressure-increasing device connected with the translating circuit, and an electric connection from said pressure-increasing device to said indicating device.

No. 27,969. Regulating System for Electric Circuits. (*Système régulateur des circuits électriques.*)

The Westinghouse Electric Company, Pittsburgh, Penn. (assignee of William Stanley, Jr., Great Barrington, Mass.), U. S., 10th November, 1887; 5 years.

Claim.—1st. The combination, substantially as hereinbefore set forth, of a source of electricity, translating devices operated by electric energy derived from said source, and an electro-magnetic device, consisting of a mass of inductive material, and coils of wire applied thereto, included in said circuit varying, the counter electro-motive force established in said circuit in an inverse proportion to the number of translating devices in operation. 2nd. The combination, substantially as hereinbefore set forth, of a source of electricity, a circuit supplied by said source of electricity, and electro-magnetic device, consisting of a mass of inductive material, and coils of insulated wire applied thereto, included in said circuit, and establishing a variable counter electro-motive force therein, an inductorium, having its primary coil connected with said source and translating devices included in its secondary circuit. 3rd. The combination, substantially as hereinbefore set forth, of a source of electricity, a circuit supplied by said source of electricity, an inductorium having its primary coil connected with said source, a secondary circuit for the same, having a variable resistance, and an inductive device for establishing a counter electro-motive force in said circuit, and thereby modifying the strength of current traversing the primary coil in an inverse proportion to the changes in the resistance of the secondary circuit. 4th. The combination, substantially as hereinbefore set forth, of a source of electricity, a circuit supplied by said source of electricity, two opposing coils included in said circuit, a core under the influence of said coils, a shunt for one of said coils and an inductorium, having its primary coil included in said shunt. 5th. The combination, substantially as hereinbefore set forth, of a source of electricity, a circuit supplied by said source of electricity, two opposing magnetizing coils included therein, a core of soft iron under the influence of said opposing coils, a shunt-circuit around one of said opposing coils, an inductorium, having its primary circuit included in said shunt, and translating devices included in circuit with the secondary coils. 6th. The combination, substantially as hereinbefore set forth, with an electric circuit, of an induction coil, having its primary coil in said circuit, a circuit for the secondary coil, means for varying the resistance of the secondary circuit, a soft iron core and two opposing coils acting thereupon, one of which coils is included between the terminals of the primary coil. 7th. The combination, substantially as hereinbefore set forth, of an electric-generator or other source of electricity, a circuit therefor, means for automatically regulating the current produced thereby, two opposing helices included in said circuit, a core under the influence of said coils, a shunt circuit around one of said coils, an inductorium, having its primary coil included in said shunt, translating devices included in the secondary circuit of the inductorium in multiple arc, and means for cutting the same in and out of circuit. 8th. The combination, substantially as hereinbefore set forth, with a source of alternating or intermittent electric currents, and a circuit therefor, of a converter included in said circuit, translating devices in the secondary circuit of the converter, a magnetizing coil included in circuit with said converter, a second coil forming a shunt around the converter, and a mass of soft iron acted upon oppositely by electric currents traversing said coils. 9th. The hereinbefore described method of electric regulation and distribution, which consists in generating a current, having an electromotive force dependent upon the resistance encountered, thereby varying such resistance inversely, as the resistance encountered in converting the current into currents of different potential is varied, and varying the resistance encountered in conversion, directly as the resistance encountered is translating the last-named currents into another form of energy, is varied. 10th. The combination, substantially as hereinbefore set

forth, of a source of alternating or intermittent electric currents, a soft iron core, two opposing coils included in the circuit of said source and surrounding said core, a shunt circuit around one of said coils, and one or more translating devices included in said shunt circuit. 11th. The combination, substantially as hereinbefore set forth, of a source of electricity, a soft iron core opposing coils surrounding said core and included in the circuit of said source of electricity, conductors leading from the respective terminals of one of said coils, translating devices, and means for including the same in multiple arc between said conductors. 12th. The combination, substantially as hereinbefore set forth, of a source of alternating electric currents, a main line, means for creating a variable counter electromotive force in said main line, branch or shunt circuits of said main line, translating devices included in such branch or shunt circuits, and means for simultaneously modifying the resistance of the branch or shunt circuits, and means for simultaneously modifying the resistance of the branch or shunt, and the resistance of the main line at a point between the terminals of the branch or shunt in direct proportion.

No. 27,970. System of Electrical Conversion. *(Système d'inversion électrique.)*

The Westinghouse Electric Company, Pittsburgh, Penn., (assignee of William Stanley, jr., Great Barrington, Mass.), U. S., 10th November, 1887; 5 years.

Claim—1st. The hereinbefore described method of electrical distribution, which consists in generating currents of high potential, transmitting the same to remote points, there converting them into secondary currents of lower potential, transmitting the converted currents to points in the more immediate vicinity of the points of consumption, and there reconverting them into tertiary currents of still lower potential, and transmitting the last named currents to the points of consumption. 2nd. The hereinbefore described method of electrical distribution and supply, which consists in generating currents of high potential at a point remote from the point of consumption, and reducing the electromotive force step by step during its transmission to the point of consumption. 3rd. The hereinbefore described method of electrical distribution, which consists in transferring electrical energy from a high potential supply circuit to a lower potential consumption circuit, through an interposed electrically insulated circuit.

No. 27,971. System of Electrical Distribution. *(Mode de distribution électrique.)*

The Westinghouse Electric Company, Pittsburgh, (assignee of Oliver B. Shallenberger, Rochester), Penn., U.S., 10th November, 1887; 5 years.

Claim.—1st. The combination, substantially as described, of a source of electricity, two main lines, converters having their secondary coils connected with different points along the length of said main lines, conductors connecting the source of electricity with the primary coils of the respective converters, and one or more converters having their primary coils respectively included in the last-named conductors, and adjustable resistances included in the secondary coils, substantially as described. 2nd. The combination, substantially as described, with two or more alternate current generators, of a source of electrical current supplying the field magnet coils of the same, conductors with which said generators are connected in multiple arc, a system of feeding, conductors connected therewith, translating devices and a main line with which said translating devices are connected, and converters located along the main line having their secondary coils connected therewith in multiple arc, and their primary coils connected with the feeding conductors aforesaid.

No. 27,972. Method of and Apparatus for Connecting Alternate Current Electric Generators. *(Mode de raccordement des générateurs d'électricité à courants alternatifs et appareil pour cet objet.)*

The Westinghouse Electric Company, Pittsburgh, (assignee of Oliver B. Shallenberger, Rochester, Penn., U.S., 10th November, 1887; 5 years.

Claim.—1st. The hereinbefore described method of bringing an alternate current electric generator into multiple-arc with another similar generator when both are in action, which consists in first connecting it through a circuit of high resistance, indicating the current, traversing this circuit and thereby noting the relative phases of the two generators, and at a movement when the phases are synchronous connecting the generator independently of the resistance. 2nd. The hereinbefore described method of connecting alternate current electric generators with a work-circuit when in action, which consists in first connecting them with each other through a resistance circuit, indicating the resultant current traversing the circuit, and at a moment of minimum current through said resistance circuit, shunting or cutting out the resistance. 3rd. The combination, with an alternate-current generator and a circuit supplied therefrom, of a second alternate-current generator, a resistance circuit through which the second generator may be connected in multiple arc with said circuit, an indicating device operated by the currents traversing the resistance-circuit, and means for cutting on the resistance and indicating device. 4th. The combination of one or more alternate-current electric generators, a circuit for the same, translating devices fed from said circuit, a second generator, a circuit through which said generators may be connected in multiple arc with the translating divices, an indicator in said circuit operated by the resultant current from all the machines, and means for connecting the second generator independently of the indicating device. 5th. The combination of an alternate-current electric generator, a supply-circuit fed therefrom, a second alternate-current generator, means for connecting the same with said circuit in multiple-arc with the first, an electric converter, means for connecting the primary coil of the converter in the circuit of the second generator, and an indicating device included in the circuit of the secondary coil of the converter. 6th. The combination, substantially as described, of an alternate-current electric generator, a supply circuit, a second generator connections, whereby the generators may be connected with the circuit either independently or in multiple-arc with each other, an indicating device for each generator, and means for causing at will the current from either generator, or the resultant current from both generators to operate the corresponding indicating device. 7th. The combination, with a system of electrical distribution, of two alternate-current electric generators, one connected in circuit with said system circuit-connections, whereby the second may be placed in parallel circuit therewith, an electrical converter having one terminal of its primary coils connected in circuit with said distributing system, a switch for placing the other terminal in connection with the other generator, and an incandescent electric lamp or other indicating device included in the circuit of the secondary coil of said converter. 8th. In an apparatus for connecting alternate-current generators in multiple-arc, an electric converter having one terminal of its primary coil adapted to be connected with either generator, a switch for placing the other terminal in connection with the other generator, and an indicating device included in the circuit of the secondary coil of the converter, substantially as described. 9th. The combination of two alternate-current electric generators, an electric converter, means for placing one terminal of the primary coil of the same in connection with each generator, a switch for placing the other terminal of the primary coil in connection with the corresponding pole of the other generator, an electric circuit with which the circuit of the first-named generator is complete, means for completing the connections of the other generator with said circuit in multiple-arc with the first-named generator, and an indicating device included in the circuit with the secondary coil of said converter. 10th. The combination, substantially as hereinbefore set forth, with an inductive electric resistance, a circuit including the same, and an indicating device operated by the current traversing such resistance, of two alternate-current electric generators, switches for placing said generators in multiple-arc connection through said resistance, and means for placing the generators in multiple-arc connection independently of said resistance. 11th. The combination, with two alternate current electric generators of main circuit, means for connecting either generator with said circuit at will in full circuit, an indicating device consisting of a converter adapted to have its primary coil connected in circuit with either generator at will, and an incandescent electric lamp included in the secondary circuit of the converter. 12th. A safety device for electric circuits consisting of two fusible strips, a binding plate with which they are both connected, two insulated plates with which the remaining ends of said strips are respectively connected, and a second binding-plate adapted to be placed in electrical connection with any of the other plates. 13th. The combination, with an alternate-current electric generator, of a circuit supplied therefrom, a second alternate current electric generator, a resistance circuit through which the second generator may be connected in multiple-arc with said circuit, means for cutting out said resistance circuit, and a safety plug applied to the system of circuits consisting of a fusible strip and a short circuiting device therefor, substantially as described.

No. 27,973. System of Electrical Distribution and Conversion. *(Mode de distribution et d'inversion électriques.)*

The Westinghouse Electric Company, Pittsburgh, (assignee of Oliver B. Shallenberger, Rochester, Penn., U. S., 10th November, 1887; 5 years.

Claim.—1st. The combination, substantially as hereinbefore set forth, of a main line, a converter having its primary coil included in the main line, conductors leading from different points in the length of the secondary coil, translating devices or groups of the same, and a circuit controller for including said translating devices or groups of the same between different conductors leading from the secondary coil at will. 2nd. The combination, with the primary coil, of a converter of a secondary coil, conductors leading from the different points in the length of the latter, switch-points to which said conductors lead, switches applied to said points, and translating devices connected in multiple arc between one of said conductors and one of said switches. 3rd. The combination, in a system of electrical distribution, of a source of alternating currents, a converter having its primary coil supplied from said source, a second converter supplied from the secondary circuit in the length of the secondary coil of the second converter translating devices, and means for including any or all of said devices between the different conductors, substantially as described. 4th. The combination, in a system of electrical distribution, of a source of alternating currents, a converter supplied from said source, distributing conductors supplied from the secondary of said converter, translating devices supplied from said distributing conductors, a second converter having its primary coil also supplied from said distributing conductors, other translating devices or groups of the same, and means substantially such as described, for including the last-named translating devices in circuit with more or less of the secondary coil of the second converter. 5th. The combination, with a source of electricity, of a converter having its primary coil in circuit therewith, contact-points connected with different points in the length of said secondary coil, a conductor permanently connected with one of said points, a secondary conductor adapted to be placed in connection with any of said points, a third conductor leading from the terminal of the secondary coil, and translating devices, certain of which are connected in circuit between the last and first-named conductors, and other translating devices included between said last-named and the remaining conductor.

No. 27,974. System of Electrical Distribution and Conversion. *(Mode de distribution et d inversion électriques.)*

The Westinghouse Electric Company, Pittsburgh, (assignee of Oliver B. Shallenberger, Rochester), Penn., U.S., 10th November, 1887; 5 years.

Claim.—2st. The combination, with a three-wire system of translating devices, of electric converters consisting of stationary bodies of inductive material, and stationary primary and secondary coils of insulated wire, such converters having their secondary coils connected in series with each other, their free terminals being respectively connected with the positive and negative wires of the system, and their remaining terminals with the neutral wire, and a source of alternating or intermittent currents of electricity with which the primary coils are connected in multiple arc. 2nd. The combination of a three-wire system of electrical distribution, two converters, each consisting of a stationary body of inductive material and stationary primary and secondary conductors applied thereto, such converters having their secondary coils connected in series with each other, and with the positive and negative conductors, a connection from the neutral conductor with the terminals of the secondary coils, and means for transmitting alternate or intermittent electric currents through the primary coils. 3rd. In a system of electrical distribution, in combination, with a source of alternating or intermittent currents of supply, conductors connected therewith in multiple arc, and one or more groups of electric converters having their primary coils connected in multiple arc with said supply conductors, and their secondary coils, connected in series with each other and with the main conductors of the system, a third or neutral conductor connected with a neutral point in the group or groups of converters, and translating devices connected between the neutral conductor and each supply conductor, substantially as described. 4th. In a system of electrical distribution, the combination with a source of alternating or intermittent electric currents, of two or more groups of electrical converters located at different points, and supply conductors leading from said source to each of said groups and connecting the primary coils of the converters in multiple arc with the source, regulating devices for each of said conductors, and a translating system connected with the secondary coils of the converters, substantially as described. 5th. The combination, with three conductors, of the translating devices included in multiple arc between one of the conductors and the other two conductors, a converter consisting of a stationary mass of soft-iron, and stationary primary and secondary coils applied thereto, electrical connections between the terminals of the secondary coil, and said two conductors respectively, a connection between the remaining conductor, and an intermediate point in the secondary coil, and a source of alternating or intermittent electric currents supplying the primary coil of the converters.

No. 27,975. System of Electric Circuit and Automatic Controlling Apparatus therefor. (*Mode de circuit électrique et appareil automatique pour le régler.*)

The Westinghouse Electric Company, Pittsburgh, (assignee of George Westinghouse, jr., Rochester), Penn., U.S., 10th November, 1887; 5 years.

Claim.—1st. The combination, with a source of electricity, of multiple conductors extending from the respective poles, a series of converters having their primary coils respectively connected with different pairs of said conductors, and a single pair of distributing conductors with which the secondary coils are connected in multiple arc. 2nd. The combination, with an alternate current electric generator, of two or more main lines extending from each pole, translating devices, distributing conductors with which said devices are connected, and means for supplying currents to said distributing conductors from the different pairs of main lines. 3rd. The combination of a source of alternate electric currents, a series of main lines extending from each pole thereof, a series of converters, conductors including the respective primary coils of the same, switches applied to one terminal of each of said conductors, and contact-points applied to each switch connected with the respective main lines leading from one pole of the source. 4th. The combination of a source of a alternate electric currents, a series of main lines extending from one pole thereof, a series of converters, conductors leading from said main lines and including the respective primary coils of the same, switches applied to one terminal of each of said conductors, and contact-points applied to each switch connected with the respective main lines, and connections from the remaining terminals of said conductors with the remaining pole of said source. 5th. The combination, with a source of electricity and multiple mains leading therefrom, of a series of converters normally connected between pairs of said mains, and an automotic circuit-controlling device for interchanging the connections of said converters. 6th. The combination, with a source of electricity and multiple mains leading therefrom, of automatic circuit-controlling devices set in operation by the interruption of one of the mains connected therewith, substantially as described. 7th. The combination, with a source of electricity, and multiple mains leading from the respective poles thereof, of a series of converters respectively connected between different pairs of said mains, and a circuit-controlling device through which the connections of each converter are normally completed, and a retaining device for each controller operated by currents through the converter, substantially as described. 8th. The combination of an electric converter, a pair of supply conductors for delivering currents thereto, and an automatic circuit-controlling device successively placing the different lines of said pairs in circuit with the primary coil of the converter. 9th. The combination, with an electric converter and a pair of supply conductors for delivering currents thereto, of an automatic circuit-controlling device successively placing the different lines of said pairs in circuit with the primary coil of the converter, and a retaining and releasing device causing such controllers to operate upon the interruption of the circuit.

No. 27,976. System of Electrical Distribution. (*Mode de distribution électrique.*)

The Westinghouse Electric Company, Pittsburnh (assignee of George Westinghouse, Jr., Rochester), Penn., U.S., 10th November, 1887; 5 years.

Claim.—1st. The combination, with a source of alternating intermittent or pulsatory currents, of two conductors derived therefrom, a group of translating devices, each having one terminal connected with one of said conductors, and their other terminals connected with each other, a second group, each having one terminal connected with the other conductor, and their remaining terminals connected with the united terminals of the first group, and an electric converter, having one coil included in the circuit between the connected terminals, and one of said conductors, and the other coil included in circuit between the connected terminals and the other conductor. 2nd. The combination of two conductors, respectively designed to convey alternating intermittent or pulsatory currents, a group of translating devices, each having one terminal connected with one of said conductors, and the other terminal connected with each other, a second group of translating devices, each having one terminal connected with the other of said conductors, and their remaining terminals connected with the united terminals of the first group, and an electric converter having one coil included in parallel circuit with the first group, and the other coil in parallel circuit with the second group. 3rd. The combination of two conductors, respectively designed to convey alternating intermittent or pulsatory currents, a group of translating devices, each having one terminal connected with one of said conductors, and the other terminals connected with each other, a second group of translating devices, each having one terminal connected with the other of said conductors, and their remaining terminals connected with the united terminals of the first group, and an electric converter having one coil included in parallel circuit with the first group, and the other coil in parallel circuit with the second group, the coils of said converter having a relative inductive value proportionate to the difference of potential required at the terminals of the groups. 4th. The combination, with two main lines, of an electric converter having a primary and secondary coil connected in series between said lines, translating devices connected in multiple arc with one of said coils, and other translating devices connected in multiple arc with the other of said coils.

No. 27,977. System of Electrical Distribution. (*Mode de distribution électrique.*)

The Westinghouse Electric Company, Pittsburgh (assignee of George Westinghouse, Rochester), Penn., U. S., 10th November, 1887; 5 years.

Claim.—1st. The combination of a source of alternating currents, a translating system operated thereby, a commutating device for rectifying a portion of the alternating current, and a storage battery charged by such rectified current. 2nd. The combination, with a source of alternating currents, of a storage battery, a motor driven by the alternating currents, a commutator driven by the motor, and conductors connecting said source with said storage battery, through said commutator. 3rd. The combination, with a main line, and means for supplying the same with alternating electric currents, of a converter, having its primary coil in circuit therewith, an alternate current electric motor connected in circuit with the secondary coil of the converter, a rectifying commutator driven thereby, conductors leading from the secondary coil to said commutator, and a storage battery connected with said commutator. 4th. The combination, with a source of alternating currents, and a commutator for rectifying such currents, of a storage battery, a switch for connecting the battery with said commutator, and a switch for connecting said battery with conductors, normally leading from said source. 5th. The combination, with a source of alternating electric currents, and a system of incandescent lights operated thereby, of a commutating device driven thereby, a storage battery suppled with a continuous current through said commutating device, a switch for connecttng said storage battery with the translating devices, and a switch for disconnecting the same from the commutating device. 6th. The combination, substantially as described, of an alternate current electric generator, a converter, having its primary coil connected in circuit therewith, an electric motor driven by the alternate currents derived from said generator, a rectifying commutator driven by said motor, and an electric railway supplied with currents from said commutator. 7th. The combination, substantially as described, of an electric generator delivering alternating electric currents, an alternate current motor driven thereby, a rectifying commutator rendering continuous the current delivered from said generator or a portion of the same, and an electric railway supplied by such continuous current. 8th. The combination of an alternate current electric generator, a converter reducing the potential of the currents delivered thereby, a rectifying commutator rendering continuous such reduced currents, and an electric railway supplied by such continuous currents. 9th. The combination, substantially as hereinbefore set forth, of an alternate current elecrtric generator, a converter supplied with currents therefrom, a rectifying commutator straightening the currents from said converter, an electric railway supplied with such rectifying currents, and a storage battery charged by currents from said rectifying commutator. 10th. The combination of an electric locomotor, a current rectifier upon said locomotor, a source of alternating electric currents, and means for connecting said source with said rectifier. 11th. The combination, with an electric locomotor, of a current rectifier, and a storage battery carried thereby.

No. 27,978. Circuit Controlling Apparatus for Electric Circuits. (*Appareil à régler les circuits électriques.*)

The Westinghouse Electric Company, Pittsburgh (assignee of Oliver B. Shallenberger, Rochester), Penn., U. S., 10th November, 1887; 5 years.

Claim—1st. The combination, with two or more generators, of two or more pairs of lines, a switch-plate for each of said lines, individual switch-points respectively applied thereto, and connected with the respective generators, and means, substantially as described, for placing each pair of lines in connection with the respective pairs of switch-plates at will, substantially as described. 2nd. The combination, with a group of generators, of independent pairs of main lines terminating in individual switch-plates, contact-plates for connecting the individual switch plates with the respective poles of one of the said generators, and independent switches for connecting the

generators in multiple arc circuit. 3rd. A switch, or circuit controlling device, consisting of a movable lever, two independent contact plates upon said lever, two independent series of contact plates respectively applied thereto, and individual contact plates applied to last-named contact-plates, and adapted to be placed in electrical connection therewith at will. 4th. A circuit-controlling switch, consisting of two independent circuit-closing plates, two independent series of contact plates respectively applied thereto, corresponding series of contact plates, one or both of which series are normally electrically insulated therefrom, means for completing the connections between any two of the first-named contact-plates and their corresponding insulated plates, and means for moving the circuit-closing plate into contact therewith. 5th. In a system of electrical distribution, the combination of an outgoing and return wire, two contact plates, with which said wires are respectively connected, two series of contact points applied to said plates respectively and arranged in pairs, means for moving said circuit-closing plates against said pairs of contact-plates simultaneously, different pairs of supply conductors, and means for completing the connections of any pair of contact plates with a corresponding pair of supply conductors at will, substantially as described.

No. 27,979. Incandescent Electric Lamp Socket. (*Douille de lampe électrique incandescente.*)

The Westinghouse Electric Company, Pittsburgh (assignee of Frank L. Pope, Elizabeth, N.J., Henry M. Byllesby and Philip Lange, Pittsburgh), Penn., U.S., 10th November, 1887; 5 years.

Claim.—1st. In a key socket for incandescent electric lamps, the combination of a supporting block, a cylindrical holder for the lamp, a shaft carrier by said block having its axis at right angles to the axis of said holder, a pivoted lever, means for moving said lever by the operation of said shaft, an insulated contact-piece upon said lever, and two contact springs applied thereto, substantially as described. 2nd. In a key switch for electric light holders, the combination of two binding posts, a connection from one to the lamp-socket, a yielding contact with which the other is connected, a second yielding contact connected with the central contact of the holder, a pivoted lever, a movable contact piece upon said lever, and a key and crank-shaft for moving said contact-piece between said yielding contacts and forming a sliding contact therewith. 3rd. In a holder for an electric lamp, the combination of the binding posts or plates, the block supporting the same, the shell surrounding the posts and block, and insulating plates separating the several conducting parts from each other. 4th. In a key-socket for an electric lamp, the combination, with the outer shell, of a cap for closing the end of the same, having inclined bayonet joints and set screws upon said shell extending through said bayonet joints. 5th. The combination, with a supporting block for the circuit controlling parts of an incandescent electric lamp holder, of a shell surrounding the same, a cap applied to the end of the shell by a bayonet joint and set screws working in said joints. 6th. In a holder for incandescent electric lamps, an insulating ring separating the flexible jaws from the surrounding case, which ring is fastened by a bayonet joint. 7th. In a holder for an incandescent electric lamp, a ring of insulating material separating the flexible jaws from the inclosing shell, a bayonet joint securing the ring in position, and a lug upon the outer edge of said ring, substantially as set forth. 8th. In a holder for an incandescent electric lamp, a central contact, consisting of flexible arms, which arms expand at their ends to admit the lamp terminal, substantially as and for the purpose set forth. 9th. In an electric lamp holder, an outer contact shell having resilient arms, an annular recess for receiving the lamp, and a central contact consisting or converging arms, combined with the outer shell to hold the lamp in position and to complete the circuit connections.

No. 27,980. Electric Conductor.

(*Conducteur électrique.*)

The Westinghouse Electric Company (assignee of George Westinghouse, Jr.), Pittsburgh, Penn., U. S., 10th November, 1887; 5 years.

Claim.—1st. The combination of a central conductor, a covering of insulating material, and two or more independent conducting plates applied to the opposite sides of the same, and curved to conform to the surface thereof. 2nd. An electric conductor, consisting of a central conducting core, an outer conductor constructed in longitudinal sections curved to conform thereto, and an intervening insulating material. 3rd. An electric cable or conductor, consisting of a central core, an outer conductor in longitudinal sections curved to conform thereto, an insulating material between the two and an external covering.

No. 27,981. System of Electrical Distribution. (*Mode de distribution électrique.*)

The Westinghouse Electric Company, Pittsburgh, Penn. (assignee of William Stanley, Jr., Great Barrington, Mass.), U. S., 10th November, 1887; 5 years.

Claim.—1st. In a system of electrical conversion and distribution, the combination of an auto-converter, with three or more closed circuits, of each of which the electric conductor of said auto-converter forms a portion, a source of electricity included in one of said circuits, and one or more auto-converters included in the remainder of said circuits. 2nd. In a system of electrical conversion and distribution, the combination of an auto-converter, with three or more closed circuits of each of which the electric conductor of said auto-converter forms a portion, a source of electricity included in one of said circuits, and one or more auto-converters and one or more translating devices included in the remaining circuits. 3rd. In a system of electrical conversion and distribution, the combination of a supply circuit including a generator and an auto-converter, a consumption circuit including a second auto-converter, and a third or intermediate circuit, which includes the whole or a portion of the conductor of each of said auto-converters. 4th. The combination of a continuous electric conductor, and a mass of magnetizable material, situated within the same field of force, or in inductive relation thereto, the whole or a portion of said conductor being included with a source of electric energy in a closed primary circuit, a lever portion of the same conductor included in each of one or more closed secondary circuits, and translating devices included in said secondary circuits. 5th. In a system of electrical conversion and distribution, a supply circuit, a secondary circuit, portions of which circuits are common to each other, and a third circuit, a portion of which is included in the secondary circuit. 6th. The combination of a source of alternating or intermittent electric currents, a circuit therefor, an inductive resistance included in said circuit conductors leading from different points in the length of the portion of the circuit affected by said resistance and otherinductive resistances included in one or more of the circuits thus derived. 7th. The combination of a source of alternating intermittent or pulsatory currents, a circuit therefor, a mass of magnetizable material, so disposed as to form a closed magnetic circuit situated in inductive relation thereto, a second closed circuit in part common with the first-named circuit receiving by inductive action currents of a different potential therefrom, a closed circuit and translating devices included therein, and means for inducing electric currents in said closed circuit by reason of the currents in the second-named circuit.

No. 27,982. Process of Preparing Cereals.

(*Procédé de préparation des céréales.*)

James W. Robertson, Frank J. Phelps, Detroit, Mich., and Erskine L. Babcock, Cuyahoga Falls, Ohio, U. S., 11th November, 1887; 5 years.

Claim.—The process herein specified of making evaporated tender curled granules from corn, for the procuring of a nutritive product, which process consists as follows, viz: crushing the corn in a dry state and separating the hulls therefrom, second, soaking in cold water the hulless portions to soften and prepare for curling, third, passing the soaked particles while damp through a suitable mill, curling the same, forth evaporating the moisture from the curled product, leaving white unsteamed tender curled granules.

No. 27,983. Soft Coal Burner.

(*Poêle à charbon mou*)

James H. Herrick, London, Ont., (Co-inventor with John W. Herrick, Detroit, Mich., U.S.), 11th November, 1887; 5 years.

Claim.—1st. The columns A, A and one or more of the sections B, C, in combination with the fire pot D, substantially as and for the purpose hereinbefore set forth. 2nd. The fire pot D formed with inclined flanges F, in combination with the fire pot E, formed with the inclined flanges G, substantially as and for the purpose hereinbefore set forth. 3rd. The section C, formed with one or more inclined flanges I, in combination with the ring H, formed with one or more inclined flanges H_1, and the fire pot D, substantially as and for the purpose hereinbefore set forth. 4th. The ring H, formed with one or more flanges H_1, and one or more sections B, C formed with one or more flanges I and lugs C_1, in combination with the columns A, A, and fire pots D, E formed with one or more inclined flanges F and G respectively, substantially as and for the purpose set forth.

No. 27,984. Manufacture of Artificial Stone and Marble. (*Fabrication de la pierre et du marbre factices.*)

Henry Bacon, Charleston, Me., U.S., 11th November, 1887; 5 years

Claim.—1st. A composition of matter consisting of sand or gravel and portland or other cement, or of pulverized gypsum or Keene's or other similar cement, prussiate of potash, dissolved caoutchouc, chloride of lime, spirits of ammonia and water, combined in the manner and proportions substantially as set forth and for the purposes specified. 2nd. The herein-described liquid compound consisting of prussiate of potash, dissolved caoutchouc, chloride of lime, spirits of ammonia, and water, substantially in the proportions named, for the purpose of producing the crystallization and carbonization of the artificial stone or marble, as described. 3rd. The herein-described liquid compound consisting of water, oil of vitriol, and chloride of lime, substantially in the proportions named, for the purpose of bleaching the artificial stone and rendering the same of uniform colour, as set forth.

No. 27,985. Process of Making Metal Door Plates. (*Procédé de fabrication des plaques métalliques des portes.*)

William C. Springer, Peterborough, Ont., 11th November, 1887; 5 years.

Claim.—1st. The placing together of letters formed on section plates within an adjustable frame, so as to form names, and making therefrom a mould in sand or other suitable material into which molten metal may be poured, so as to form a solid cast metal door-plate, substantially as specified. 2nd. As a new article of manufacture, a cast metal door-plate made from a mould formed on a frame containing letters on sectional platas in juxtaposition, substantially as and for the purpose specified.

No. 27,986. Carriage Gear. (*Train de voiture.*)

James McKercher, Iroquois, Ont., 11th November, 1887; 5 years.

Claim.—1st. In a waggon or carriage gear, the T-plate D secured to the reach A and having its head c^1 secured to the forward bolster B, and spring H by the bolts *i* passing through the caps *f* over the spring, and through the lugs *k* on the T-plate head, substantially as shown and described. 2nd. In a carriage or waggon gear, the forward spring H and bolster E attached to the reach A, by means of the top bracket C, T-plate D and the bolts a^1 and b^1, substantially as herein

shown and described. 3rd. In a carriage gear, the brace G pivoted centrally to the reach A, and having its ends bolted to the axle, substantially as shown and described. 4th. In a carriage or waggon gear, the segment track E rigidly attached to the axle, and having its ends secured to and supported by the brace G, substantially as described. 5th. In a carriage or waggon gear, the T-plate D secured rigidly to the reach, and provided with the holding-down arm g_1, ever-reaching and turning under the segment track E, substantially as herein shown and for the purpose set forth

No. 27,987. Drawer Pull. (*Bouton de tiroir.*)

William W. Chilton, New York, N.Y., U.S., 11th November, 1887; 5 years.

Claim.—1st. In a drawer pull, the head and spindle having the slit H, in combination with the fingers C provided with projections I, and a shank fitting and rigidly secured in said slit, and the wedge for separating the fingers after they have been applied to the drawer front, substantially as set forth. 3nd. In a drawer pull, the head and spindle having the shoulder G and slit H, and the fingers C secured in said slit and having projections I whose side edges form ribs, combined with the escutcheon having an aperture corresponding in outline with that of the inner end of the spindle, and ribs and a wedge for spreading the fingers C, substantially as set forth.

No. 27,988. Gearing. (*Engrenage.*)

William F. Cochrane, Cambridge, Ind., U. S., 11th November, 1887; 5 years.

Claim.—1st. In a system such as described, the combination, with a central frame and driving shaft, of a series of pairs of rolls, each pair provided with a driving shaft radially disposed with respect to the first-named driving shaft and connected thereto by gearing, substantially as described. 2nd. The combination in a system such as described, and with the central casting and radially disposed frames, the series of pairs of rolls mounted in said frames, the shafts passing through the hollow adjustable rolls of the series, and each provided with a pinion and the main driving shaft centrally arranged and provided with a wheel engaging pinions on the several roll shafts, substantially as and for the purpose set forth. 3rd. The combination in a system such as described, of the series of roll frames connected together and to the central rings, the roll-mills mounted upon said frames, the radially disposed shafts each passing through a hollow adjustable roll of one of the several mills, the vertical shaft driven from a prime motor, and provided with a wheel located above and resting in contact with pinions on the several roll-driving shafts, as and for the purpose set forth. 4th. In a system such as described, wherein a series of radially disposed shafts are employed for driving the separate sets of rolls, and in combination with said roll shafts and the pinions secured to their inner ends, a vertical driving shaft carrying a wheel located above but resting upon the said several pinions, and maintained in contact therewith by gravity, substantially as and for the purpose set forth. 5th. The combination to form a system such as herein described, of a central frame provided with a series of radially disposed roll frames, a driving shaft for each set of rolls, a central main driving shaft, and gearing connecting said main shaft with all of the roll shafts to simultaneously drive the latter, substantially as described. 6th. The improved frame, constructed substantially as hereinbefore described, of the central ring and the series of radially arranged roll frames connected together and to said central ring, the whole combined and arranged as and for the purpose set forth. 7th. The combination, with a vertical main driving shaft, and its gear wheel, a series of roll shafts radially arranged with respect to the main driving shaft, and provided with pinions gearing with the wheel thereon, each of said roll shafts supported in fixed bearing passing through the hollow adjustable roll of a pair or set of rolls, and connected to said roll by a flexible coupling, substantially as described. 8th. The combination to form a system such as herein described, of the several pairs of rolls supported in separate frames, and radially disposed about a central main driving shaft, a driving shaft passing through the hollow adjustable roll of each set, said several driving shafts conveying towards the central driving shaft bearings supporting the ends of the roll, driving shafts pinions applied to said last mentioned shafts, and a gear wheel mounted upon the main driving shaft, and held in contact with the series of pinion on the roll shafts, substantially as and for the purpose set forth.

No. 27,989. Railway Switch. (*Aiguille de chemin de fer.*)

John Hahn, St. Louis, Mo., U.S., 11th November, 1887; 5 years.

Claim.—1st. The combination, with a car bed, of a vertically movable rack, means for moving this rack, one or more spurred wheels keyed on a shaft located in the road-bed and bearing a winding drum, a chain connecting this drum with a lever, and a lever rod pivoted to a rail of the main track and also to a switch rail, substantially as described. 2nd. The combination, with a switch rail, of a spur wheel keyed on a shaft bearing winding drums located in the road bed, an adjustable devibe on a car bed for actuating said devices, a chain connecting one of said drums to a retracting spring, a connecting rod and a chain connecting the other drum with a switch, substantially as specified. 3rd. The combination, with the switch rails of a railway track, of a vertically movable bar A adjustably applied to a car bed, a spur wheel keyed on a shaft g on the road-bed adapted to be actuated by said bar A when adjusted by the engineer, a winding drum connected to a lever F, a lever pivoted to the main track rail, and also to a switch rail, a rod e connecting said levers, and a retracting spring g acting through the medium of chains and winding drums, substantially as described. 4th. The combination of vertically and laterally movable rack bars, with their link connections to a carriage bed, the supporting cross-bar for said racks, the windless shafts and a screw-threaded elevating shaft, substantially as described. 5th. The combination, with a carriage, of a vertically movable rack linked to the frame of said carriage, and provided with a raising device and a depending spring, substantially as described. 6th. The combination, with the racks A linked to the carriage frame so that they can receive vertical and lateral adjustment, of a vertically raising device, laterally adjusting devices, depressing springs and spreading springs, substantially as described. 7th. The combination, with the carriage frame, of the laterally and vertically adjustable racks, for the purpose described, the adjusting device therefor, and the suspension rods and rolling supports, substantially as and for the purpose described.

No. 27,990. Automatic Grain, Flour and Feed Scales. (*Balances automatiques pour les grains, la farine et les gruaux.*)

Joseph B. Dutton, Detroit, Mich., U. S., 11th November, 1887; 5 years.

Claim.—1st. The combination, with the weighing receptacle of a grain scale, of a hopper independently supported from said receptacle, and provided with an oscillating cut-off secured to and operated by a rock-shaft to close a discharge, the discharge opening from said hopper, substantially as described. 2nd. The combination, with the weighing receptacle F of the grain scale, of the independently supported hopper G, the rock-shaft K, the segmental cylindrical cut-off I carried by said rock-shaft, and the counter-weight L applied to said rock-shaft, substantially as described. 3rd. The combination, with the weighing receptacle F of the grain scale, of the independently supported hopper G, the rock-shaft K, the segmental cylindrical cut-off I, the counterweight L, the rock-arm T and the connecting rod U, all arranged to operate substantially as described. 4th. The combination, with the weighing receptacle F, the grain scale of the independently supported hopper G, the rock-shaft K carrying the oscillating cut-off, the counterweight L actuating said cut-off to close, and a locking device consisting of the rock-arm T_1 and the locking lever V with the hook h, all arranged to operate, substantially as described. 5th. The combination, with the weighing receptacle F, of the grain scale, of the independently supported hopper G, the rock-shaft K, the oscillating cut-off carried thereby, the counterweight L, the rock-arm T, the connecting rod U, the rock-arm T_1, the locking lever V provided with the hook h, and the arm k and the link M arranged to trip said locking lever V, substantially as described. 6th. The combination, with the weighing receptacle, of the independently supported hopper G, the rock-shaft K carrying the cut-off I, the cut-off or hinged door H, the lever O carrying the counterweight P, the connecting rod S, the locking lever Q provided with the hook c and arm e, the stop R, the connecting rod U provided with slot f, the rock-arms T and T_2 secured to the rock shaft K, the counterweight L, the locking lever V provided with the hook h and arm k, the link M and the connecting rod N, the parts being constructed and arranged to operate substantially as described. 7th. In a grain scale of the kind described, the combination of the weighing receptacle, the independently supported hopper, the cut-off controlling the flow of grain from the hopper, the automatically operating devices to open and close said cut-off, the hinged cut-off controlling the discharge of grain from the weighing receptacle, the automatically operating mechanism for opening and closing said cut-off in the weighing receptacle, and the locking levers V and Q and their tripping devices, substantially as described. 8th. In a grain scale of the kind described, the combination, with the weighing receptacle, of an automatically operating cut-off controlling the discharge of grain from said receptacle, an independently supported hopper, a cut-off in said hopper to control the discharge of grain into the weighing receptacle, an automatically operating device for effecting the closing of said cut-off, and an automatically operating device for effecting the opening of said cut-off, said device being controlled by the cut-off in the weighing receptacle, all substantially as described.

No. 27,991. Electric Bell. (*Timbre électrique.*)

Hans P. F. Jensen, Brown W. Webb and Jens Jensen, London, Eng., 11th November, 1887; 5 years.

Claim.—1st. The combination, with a chime or church bell, of electrical devices suspended from the crown thereof, and in circuit with a source of electrical energy, the whole adapted to operate the hammer or clapper. 2nd. The combination, substantially as shown and described, consisting of the chime or church bell, provided with the suspended electromagnet having its polar extension at right angles to its axis adapted to operate an armature carrying a hammer or clapper, the metallic strip provided with the adjusting screw, the whole in circuit with a source of electrical energy. 3rd. The combination, substantially as shown and described, consisting of the electromagnet having its polar extensions at right angles to its axis, the armature carrying the clapper or hammer having a part of its body encircling the vertical extension of the polar extension and held thereto by a stud, the sleeve of the insulation, the metallic spring or strip with adjusting screw arranged at the lower end thereof, the whole connected within the crown of the bell provided with a hanger, the entire structure arranged in circuit with a source of electrical energy.

No. 27,992. Box for Transporting Butter. (*Boîte pour le transport du beurre.*)

The Monson Refrigerating Company, (assignee of Charles S. Pullen), Monson, Me., U.S., 12th November, 1887; 5 years.

Claim.—The improved compound box for keeping butter without the use of ice, consisting of the outer box A, the inner slate box C separated from the outer box by the cleats d and a dead-air space, the hermetically sealing cover B having the slate lining c_{III} separated by the cleats d_{II} and dead-air space, substantially as shown and described.

No. 27,993. Method and Machinery for Making Spiral Conveyers. (*Mode et appareil de fabrication des vis sans fin.*)

William W. Green, Louis Gathmann and Benjamin F. Ryer, Chicago, Ill., U.S., 12th November, 1887; 5 years.

Claim.—1st. The method herein described, of forming a continuous

conveyer flight from a single straight bar of iron, by first punching the end of the bar, then curving the punched end, then winding the bar upon a mandrel simultaneously with pulling it through a grooved die, and finally stretching it upon its shaft, all substantially as set forth. 2nd The device, herein described, for forming continuous conveyor-flights from flat bar iron, consisting of a mandrel provided with means for coupling the end of the bar, and of a die having a curved groove, substantially as set forth, to operate, as specified. 3rd. 3rd. The herein-described device for securing conveyor-flights upon their shaft, consisting of a stirrup or strap set over the flight, and having its folded ends passed through and clinched upon the shaft. 4th. The combination, with a conveyor-shaft and flights thereon, of the stirrup or part M set over the flight and passed through and clinched upon the shaft, as set forth. 5th. The combination, with a conveyor shaft, of a flight, as A, having a notch or depression *m* for a strap or stirrup, set over the flight in the notch *m*, and carried through and clinched upon the shaft, as set forth. 6th. The combination, with the shaft and conveyer-flight formed of a single piece, as described, of a strap or straps set over said flight and secured to the shaft, substantially in the manner and for the purpose set forth. 7th. In a machine of the character described, a disk-clamping head R, having a spiral or cam-face, and provided with a recess, substantially as and for the purpose set forth. 8th. The combination, with the mandrel-shaft O, of the disk-clamping head R rigidly mounted on said shaft, and having a spiral or cam face, and provided with a recess, and the clamping head S loosely mounted on said shaft and adapted to have an endwise movement with relation to the same, substantially as and for the purpose set forth. 9th. The combination, with the mandrel shaft O, having a portion thereof, provided with a screw-head, of the clamping head R, as described, the head S and the hand-nut U engaging with the threaded portion of said mandrel. substantially as and for the purpose set forth. 10th. The combination, with the mandrel shaft O suitably supported at each end, and the means described for imparting a rotary motion to the same, of the clamping head R rigidly mounted on said shaft, and having a spiral or cam face, the companion head S loosely mounted on said shaft, the hand nut U having a threaded engagement with said shaft, and the former or guide V provided with the slot *v*, all combined and arranged to operate substantially as and for the purpose set forth.

No. 27,994. Animal Catcher. (*Piège.*)

George Reid, Reese (assignee of Rollin D. Chappell, Vassar), Mich., U.S., 12th November, 1887; 5 years.

Claim.—1st. The combination of the jaws, the tripping-dog, the bolt passing through said parts, the levers pivoted together and to said jaws, the spring attached to the rear ends of the jaws, the rope passing through one of the jaws, and the spring having one end attached to the opposite jaw, the staff detachably connected to one of said jaws, as and for the purposes specified. 2nd. In a device for the purposes specified, the combination of the jaws A, B, the dog having the curved arms *h* and prong Z^1, the bolt or rivet h^1, the levers Z, Z, pivoted as set forth, the coiled spring having one end secured to the jaw B by means of the yokes *a*, the rope R passing through said jaws at the rear end and through the hole of the jaw A, the pin *t* passing between the coils of said spring and the rope within the socket of the jaw A and staff H adapted to enter said socket, substantially as and for the purposes specified.

No. 27,995. Station Indicator.

(*Indicateur des stations.*)

Robert Senftner, Brooklyn, N. Y., U. S., 12th November, 1887; 5 years.

Claim.—1st. In a station indicator, a stationary projecting piece C formed with a gradually rising and falling face and located on the line of a railroad, and a vibrating lever D so suspended from the car that it shall engage with the stationary projecting piece C, and be vibrated by it in combination with the indicator operating mechanism rigidly affixed to the car, and composed of the rocker F capable of being turned either way, and which is rigidly affixed to the shaft E, which shaft E carries the vibrating lever D, the levers G, G^1, so placed as to engage with the ends of the rocker F said levers G, G^1 being made to constantly engage with the end of the rocker T, by means of the springs f, f^1, stops g, g^1 for limiting the upward throw of the pulling ends of the levers G, G^1, stops e, e^1 for limiting the vibration of the rocker F, and spring E connected to the rocker F by the arm I and link J for retaining the lever D in a perpendicular position, substantially as described. 2nd. In a station indicator for railway cars, a composite ratchet wheel T composed of the ratchet wheels T^1, T^{11} engaging with the pawls U, U^1, and the detent wheel T^{111} engaging with the detent *p* superimposed one upon the other, and all fastened to one shaft or spindle P, substantially as described. 3rd. In a station indicator, the composite wheel T composed of the ratchet T^1 T^{11}, and the detent wheel T^{111}, in combination with the pawls U, U^1 engaging with the composite wheel T, sliding blocks M, M^1, which carry, and in their upward movement actuate the pawls U, U^1 and the springs *m*, m^1, one end of each being fastened to the sliding blocks M, M^1, and the other to the pawls U, U^1, and stops O, O^1 by which the contact points of the pawls U, U^1, are prevented from entering within the radius of their respective ratchet-wheels, substantially as described. 4th. In a station indicator, the composite wheel T, composed of the ratchet wheels T^1, T^{11}, and the detent wheel T^{111}, in combination with the pawls U, U^1, engaging with the composite wheel T, sliding blocks M, M^1, which carry, and in their upward movement actuate the pawls U, U^1, springs *m*, m^1, one end of each being fastened to the sliding blocks M, M^1, and the other to the pawls U, U^1, stops O, O^1, by which the contact points of the pawls U, U^1 are prevented from entering within the radius of their respective ratchet wheels, the spring detent *p* engaging with the detent wheel T^{111} to insure a regularity of motion and the spring V, the two ends of which are fastened to the ends of the sliding blocks M, M^1 are returned to their original position, drawing the pawls U, U^1 with them and turning the composite wheel T, substantially as described.

No. 27,996. Magazine Fire Arm.

(*Arme à feu à magasin.*)

Charles P. N. Weatherby, N.Y., U.S., 12th November, 1887; 5 years.

Claim.—1st. In a fire-arm, a front and rear magazine M, N, for the purposes herein set forth. 2nd. In a fire-arm, a double irregular incline X, for the purpose herein set forth. 3rd. In a fire arm, a loading and extracting device, consisting of bolt C and extractor I, constructed and arranged substantially as set forth. 4th. In a fire-arm extracting hook I, bevelled on its upper side, in combination with a corresponding bevelled recess K in the chamber, for the purpose herein set forth. 5th. In a fire-arm, a magazine, the bottom or side of which has wave corrugations formed thereon, for the purpose herein set forth. 6th. In a fire-arm, having a magazine in the butt stock, a trigger R, constructed substantially as and for the purpose herein set forth. 7th. In a fire-arm, a slide T operated by push button *s*, in combination with a recess formed on the bolt, substantially as and for the purpose herein set forth.

No. 27,997. Bag Lock. (*Serrure de sac*)

William T. Milliken, Cheney, W. T., U. S., 12th November, 1887; 5 years.

Claim.—1st. The combination in a lock, of the longitudinally-movable bolt F, having the rack-teeth, the spring bearing against the said bolt to move it in one direction, the spring-actuated latches pivoted to the bolt F, and the pinion engaging the rack-teeth of the bolt, and adapted to be turned by a key for the purpose set forth, and the hasps to engage the latches, substantially as described. 2nd. In a lock, the combination of the movable bolt F, the independently-movable spring-actuated latches, connected thereto and movable therewith simultaneously in one direction, the hasps adapted to engage with the said latches, and the springs to withdraw the keepers from the lock case, when the bolt F is moved to disengage the latches from the keepers, substantially as described.

No. 27,998. Self-Propelling Waggon-Train.

(*Train de wagon auto-propulseur.*)

Jonas B. Osborne, Daggett, Cal., U.S., 12th November, 1887; 5 years.

Claim.—1st. In a waggon train, the members of which are suitably coupled, independent propelling engines upon each member of the train and connected with the driving wheels, and a steam boiler upon the leading member of the train connected with and operating the engine on the succeeding members, substantially as and for the purpose herein described. 2nd. In a waggon train, the members of which are suitably coupled, independent gearing upon each member of the train, by which its drive wheels are operated, in combination with a steam boiler on the leading member of the train and connected with the gearing thereof, and suitable steam pipes by which the steam from the engines of each member of the train, substantially as described.

No. 27,999. Knitting Machine.

(*Machine à tricoter.*)

William H. Kelly, Woonsocket. R. I., U. S., 12th November, 1887; 5 years.

Claim.—1st. In a knitting machine of the character described, and having the pivoted switch cams [illegible], E^2 and plate H, a tumbler or device disposed intermediately of said cams, and adapted to engage the first or advance needle, as it passes over the cam E, and pull it up or withdraw it from action, substantially as described. 2nd. In a knitting machine, of the character described, and having the pivoted switch cams E, E^2 and plate H^2, a tumbler or device disposed intermediately of said cams, and adapted to engage the first or advance needle, as it passes over the cam E^2, and pull it up or withdraw it from action, substantially as described. 3rd. In a knitting machine of the character described, and having the fixed cam plate H^2, pivoted switch cam E^2 and plate or ledge D, a switch or device disposed near the outer end of said plate, and adapted to engage the first or advance needle, as it passes the plate H^2, push it down or bring it into action, and discharge its butt onto the plate D, substantially as described. 4th. In a knitting machine of the character described, and having the fixed cam-plate H, pivoted switch-cam E and plate or ledge D, a switch or device disposed near the outer end of said plate and adapted to engage the first or advance needle as it passes the plate H, push it down or bring it into action, and discharge its butt onto the plate D, substantially as described. 5th. In a knitting machine of the character described, the pivoted tumbler K^2 provided with the notch or shoulder X in combination with the pivoted switch-cam E^2 and plates J, H^2, substantially as described. 6th. In a knitting machine of the character described, the pivoted tumbler K, in combination with the pivoted switch cam E, and plates J, H, substantially as described. 7th. In a knitting machine of the character described, the pivoted switch-plate L^2, provided with an arm or projection for engaging the needle, and a spring for returning it to its normal position, in combination with the plate H^2, pivoted switch cam E^2, and a stop for said switch-plate, substantially as described. 8th. In a knitting machine of the character described, the pivoted switch-plate L, provided with an arm or projection for engaging the needle, and a spring for returning it to its normal position, in combination with the plate H, pivoted switch cam E, and a stop for said switch-plate, substantially as described. 9th. In a knitting machine of the character described, the arm *f* provided with the shoulder or notch *i*, in combination with the pivoted switch-plate L, and a stop for said plate, substantially as described. 10th. In a knitting machine of the character described, the arm f^2 provided with the shoulder or notch *i*, in combination with the switch-plate L^2, and a stop for said plate, substantially as described. 11th. In a knitting machine of the character described, the set screw N, in combination with the pivoted switch plate L, and spring *g*, substantially as and for the purpose set forth. 12th. In a knitting machine of the character described, the set screw *l*, in combination with the pivoted tumbler K, substantially as and for the purpose set forth. 13th. In

a knitting machine of the character described, the cylinder C cut out or provided with a cavity in its upper portion for receiving a movable switch, in combination with a switch disposed or partially disposed in said cavity, a standard or support for said switch, and a spring for returning the switch to its normal position after it has engaged and pushed down the needle, substantially as described. 14th. In a knitting machine of the character described, the cylinder C, fixed cam-plates A, A^2, B, D, H, H^2, J, pivoted switch-cams E, E^2, pivoted tumblers K, K^2 provided with shoulders X, the screws N^1, stops a, d^2, springs g, standards Q, pivoted switch-plates L, L^2, and arms f, f^2 provided with the shoulders i, constructed, combined and arranged to operate substantially as described.

No. 28,000. Hame Coupling.

(*Attache de mancelle.*)

Francis M. Franklin and James G. Ryersee, Jefferson, Iowa, U. S., 12th November, 1887; 5 years.

Claim.—1st. In a hame coupling, the portion A having a semi-pherical or elliptical portion A^1 between the members or shanks B, and a socket adapted to fit over said portion, and provided with members c, c, for attaching the same to the tug, substantially as shown and for the purpose set forth. 2nd. The combination of the portion A, provided with curved shanks B, and a connecting portion upon which is formed a semispherical projecting portion A^1, which extends inwardly at an angle with said shanks, and a portion C having a socket D, and members c, c, to which the tug is attached, substantially as shown and for the purpose set forth.

No. 28,001. Ironing Board. (*Planche à repasser.*)

Toussaint Dsève, Montreal, Que., 12th November, 1887; 5 years.

Résumé.—Une planche à repasser composée de table A de forme ordinaire, munie des supports pliants B, C et G, à, charnières c e f g, et de la barre évidée F, le tout tel qui ci-dessus décrit et pour les fins sus-mentionnées.

No. 28,002. Gas Stove. (*Poêle à gaz.*)

James Smith and Harry J. Boyd, London, Ont., 12th November, 1887; 5 years.

Claim.—1st. In a gas stove, a bed of punice or lava placed immediately above the plane of the gas burner, so as to act as a spreader to the flame and receive and radiate the bed, substantially as specified. 2nd. The combination, with the above-described bed, of punice or lava I, a metallic basin G attached to the underside of top-plate B of a gas stove, and enclosing the open space C beneath the said bed of punice or lava, so as to partially exclude the outer air while admitting sufficient through openings i to supply the burner, substantially as shown and specified. 3rd. In combination with the burner of a gas stove, an attachment for purifying the flame by the more perfect combustion of the carbon, consisting of a metal tube F, trumpet-shaped as shown, provided with expanding flanges a, c at bottom and top enclosing the burner and attached thereto by ring d and supported outer ring f, substantially as shown and specified.

No. 28,003. Lubricator. (*Graisseur.*)

Wallace MacMullen and Dickson D. MacMullen, (Administrators of the estate of Michael MacMullen), Brooklyn, N. Y., U. S., 12th November, 1887; 5 years.

Claim.—1st. A lubricator consisting of two parts, the upper part holding a wick or other capillary conductor, and provided with an oil-inlet at one side, and the lower part constituting the oil-reservoir, the two parts being so arranged in relation to each other that they can be placed and removed from the journal-box at will, said lubricator being held in position in the journal-box by suitable means, substantially as set forth. 2nd. A lubricator consisting of a box or reservoir B, with a cover A having a concave upper bearing surface, a wick-holder or opening C, a wick or capillary substance D and levers F, and springs G, as described. 3rd. A lubricator consisting of the oil-reservoir B, the cover A having a concave upper surface, a wick-holder C, the wick or capillary substance D, the oil-inlet E with its cover e and spring e^1, as described. 4th. A lubricator consisting of the oil-reservoir B, the cover A having a concave upper surface, a wick-holder C, wick or capillary substance D, levers F and springs G, and the oil-inlet E provided with cover e and spring e^1, as described and shown.

No. 28,004. Car-Coupling. (*Attelage de char.*)

William C. Whittington, Caddo Mills, and John D. Stovall, Greenville, Tex., U.S., 12th November, 1887; 5 years.

Claim.—1st. In a car-coupling, the combination of the link A pivoted on the underside of the car, and having the hooked and beveiled front end, shoulder A thereon, lever B pivoted near the centre, the spring C between the outer end of the lever and the link, the side-bar D pivoted to the rear end of the lever, the spring actuated pin H secured thereto and adapted to enter a socket h in the car body, and the retractile spring K at the outer end of the lever, all constructed and arranged substantially as and for the purpose set forth. 2nd. In car-coupling, the combination of the link having a hooked front end, the lever B, spring C between the front end of the lever and the link slide bar D pivoted to the rear end of the lever, the spring-actuated latch I on the said bar having the pin H thereon to engage in a socket in the bottom of the car, and the retractile spring K at the outer end of the lever, substantially as and for the purpose set forth. 3rd. The combination, in a car-coupling, of the pivoted link A, lever B disposed approximately parallel thereto, the repressive spring C between the outer ends of said lever and link, the opposing retractile spring K and the means to normally hold the links in engagement, substantially as and for the purpose hereinbefore set forth.

No. 28,005. Process of Separating Metals from their Ores. (*Procédé de séparation des métaux de leurs minerais.*)

David W. Birmingham, Clifton, N.Y., U.S., 12th November, 1887; 5 years.

Claim.—1st. The process of separating metals from ores, which consists in amalgamating the ore, adding suitable chemicals in the amalgamating apparatus, intimately mingling or grinding the ore with mercury, and subjecting the ore pulp or shines to the action of a positive current of electricity, the positive electrode being in contact with the ore pulp or shines, the mercury and amalgam being finally deposited or collected at the negative electrode, substantially as described. 2nd. The process of separating metals from ores, and saving the floured mercury, the same consisting in intimately mingling or grinding the ore with mercury, and subjecting the ore pulp or shines containing the floured mercury to the action of a positive current of electricity, the positive electrode being in contact with the shines or pulp, the mercury amalgam being finally deposited or collected at the negative electrode, substantially as described.

No. 28,006. Car Brake. (*Frein de char.*)

John Hahu, St. Souis, Mo., U.S., 12th November, 1887; 5 years.

Claim.—1st. The combination, with a railway carriage, of a vertically movable bar bearing a brake shoe, of the rack E, the screw-threaded shaft, its pinion and the line rope connected to said rack, substantially as described, 2nd. The combination, with the shaft F for raising and lowering the bar bearing the brake of the spur-wheel keyed on this shaft, the endwise movable rack engaging said wheel and guided in a case secured to the top of the car, the case J attached to said rack and slotted as shown, a pointed bolt J annularly grooved and the pull rope H, all constructed and adapted to operate with a spring-actuated gripping device, substantially as specified. 3rd. The combination, with the line rope H on top of the car, and the brake-shaft F bearing a spurred pinion, of the rack engaging therewith, a coupling device, as described, and the spring-actuated tension device connected to the coupling pin or bolt J and also to the line rope H, substantially as described. 4th. A brake-shoe, chambered as described, in combination with a brake bar, fastening devices for the shoe, and an automatic oil supply valve, substantially as described. 5th. A brake-shoe, chambered and provided with an oil supply valve, as described, in combination with a bar which is allowed to vibrate vertically, and which is adjustable by means substantially as described. 6th. The combination of a vertically vibrating bar pivoted to the bed of a railway carriage, a brake-shoe chambered and provided with an automatic supply valve, and devices for raising said bar, as described. 7th. The chambered brake-shoe, scored as described, and provided with an oil supply channel, in combination with a spring actuated valve in this channel, adapted to be opened by contact with the axle or a collar thereon, substantially as described.

No. 28,007. Machine for Removing Stone.

(*Machine à enlever les pierres.*)

Robert Wallace, Markdale, Ont., 14th November, 1887: 5 years.

Claim.—1st. In a machine for removing stones, the combination, with a rectangular frame mounted on a waggon body, of a movable axle adapted to rotate and wind up a chain attached to the article to be raised, means provided for releasing said movable axle from its bearings at the rear end of the machine, and causing it to travel on a rack formed on said rectangular frame, and to carry the article raised to the required position over the body of the waggon, and means for lowering on to the waggon body the stone or other article raised substantially as specified. 2nd. The combination, with the rectangular frame A raised on struts B attached to a waggon body, of movable axle G held in position against stops M, M^1 on said frame, as specified, and grooved driving-wheel H designed to be actuated by draft rope m, substantially as specified. 3rd. The combination, with rectangular frame A raised on struts B attached to a waggon body, of movable axle G, stops M, M^1, pivoted arm N, lifting rod l, dog h pivoted on pawl-frame f and adapted to engage in hole i formed on top of rectangular frame, grooved pulleys J and J^1 designed to rotate by winding the rope o on axle R, spur pinions K, K^1, rack F, grooved driving wheel H actuated by draft rope m, ratchet wheel L and spring pawl a operated on a frame attached to the movable axle G, substantially as specified. 4th. The combination with the movable axle G designed to be held in position against the stops M, M^1 on the end of rectangular frame A, of gear wheel I, pinion wheel S, spur-pinions K, K^1 and rack F, chain P, rope o designed to wind and unwind on axle R, and grooved pulleys J, J^1 and spring pawl and ratchet to control the motion of said axle G, substantially as specified. 5th. The combination, with the movable axle G designed to move on rectangular frame A, of pawl frame f, guide frame C, spring E, slotted pawl a, pin b and ratchet wheel L, and rope n passing over pulley n^1 and attached to the guide frame c, so as to operate the spring pawl, substantially as specified. 6th. The dog h pivoted to the pawl frame f attached to movable axle G, and adapted to engage in slot i formed in the rectangular frame A, in combination with elbow j journalled in the pawl frame, and the lifting rod k, substantially as specified. 7th. The arm N pivoted to frame A, and designed to keep movable axle G against stop M^1, in combination with lifting rod l pivotally attached at one end to the free end of the pivoted arm N, the other end of rod l being adapted to engage in holes formed in strut B, substantially as described and for the purpose specified. 8th. The axle R journalled on the waggon frame and operated by handle p, in combination with rope o, passing over pulleys o^1 journalled on frame A, and designed to wind and unwind on grooved pulleys J, J^1 on movable axle G when the axle is moving over the rack F, substantially as specified. 9th. The guide pulley O, journalled on the frame beam E, in combination with pawl r and ratchet q, draft rope m and grooved driving wheel H fixed to the movable shaft G, the revolutions of which are designed to raise and lower stones, substantially as specified.

No. 27,008. Metal Shearing Machine.

(*Machine à cisailler les métaux.*)

Charles A. Bertsch, Cambridge, Ind., U. S., 14th Novermber, 1887 ; 5 years.

Claim.—1st. The combination of the fixed shear blade B, the frame parts C, the shear bar fitted to move vertically in the rear portion of said frame parts, the shear arms H pivoted at their rear ends to the shear bar, and at their forward ends to said frame parts, and the eccentric pivot J at the forward ends of the shear arms, substantially as and for the purpose set forth. 2nd. The combination of the fixed shear blade B, the vertically movable shear bar, the treadle, the treadle rod and the pivoted shear arms H engaging the shear bar and treadle rods, and having rearwardly open gaps K, substantially as specified. 3rd. The combination of the frame parts, the shear bar fitted for vertical movement therein, and provided with a brace rod having a guide hole, a bridge tree disposed parallel to the shear bar, and supporting a fixed lug over the guide hole in said brace rod, and a guide pin engaging said lug and the guide hole in said brace rod, substantially as and for the purpose set forth. 4th. The combination of the frame parts C, the shear bar fitted to move vertically therein, and provided with a rearwardly projecting brace rod having a guide hole, a bridge-tree reaching from frame-part to frame-part in front of the shear bar, and having a central arch terminating in a lug over the guide hole in said brace rib, and a guide pin engaging said lug and guide hole, substantially as and for the purpose set forth. 5th. The combination of the shear bar and its guide hole, the bridge-tree and its central arch and lug, and a guide pin G formed of two eccentric sections, substantially as and for the purpose set forth. 6th. The combination of the frame-parts, the shear bar fitted to move vertically therein, and the shear arms pivoted to the shear bar and to the frame-parts the pivots uniting the shear arms to the frame-parts being located above the centre of the shear bar, substantially as and for the purpose set forth. 7th. The combination of the vertical-moving shear bar, the treadle, the treadle rods, and the truss rods M reaching from front to rear of treadle, substantially as and for the purpose set forth.

No. 28,009. Adjustable Expansion Spool for Paper Rolls. (*Bobine à expansion mobile pour rouleaux de papier.*)

Charles W. Taylor, Albert M. Wickens and James Watt. Toronto, Ont., 14th November, 1887; 5 years.

Claim.—1st. A spool for paper rolls, consisting of a central shaft, an external sectional shell adjustably connected therete, and means for changing the diameter of such shell, substantially as and for the purpose specified. 2nd. A school for paper rolls, consisting of a central shaft, an external segmental shell toggles connecting said shaft and shell, and an adjustable nut in connection with the shell and screwed upon she shaft, substantially as and for the purpose specified. 3rd. In an adjustable expansion spool for paper rolls, the combination, with the shaft A having collars d_1, of the sectional shell D having flanges d and castings C, toggles B pivoted to said collars and castings, and nut E screwed upon the shaft and having the annular groove e, substantially as and for the purpose specified. 4th. The combination of shaft A, shell D, toggles B, screwed nut E and collar F, substantially as and for the purpose described.

No. 28,010. Snow Excavator. (*Charrue à neige.*)

George E. Nichols and Ingebert A. Fauske, Sioux Falls, D.T., U.S., 14th November, 1887 ; 5 years.

Claim.—1st. The snow-receiving and discharging car B, consisting essentially of the bed-frame f, provided with bottom bearing-sheaves, as described, and the pivoted longitudinal floor-sections, in combination with the rear car A having shaft C_1 and the inter-connecting chains C_3 and C_4, substantially as shown and set forth. 2nd. The snow-receiving car or excavator B, embracing inclined frame having sheaves as set forth, and the coincident pivoted sections b and b_1, each having a guard or partition at its inner edge only, in combination with the rear car A having cog-wheels c and C, standard A_1, arm A_2 and lifting-chain C_2, substantially as described 3rd. The combination, with the snow-receiving sections b and b_1, provided respectively with the longitudinal guards b_2 and b_3, of the wheels c and the chains C_3 and C_4 for the purposes described. 4th. The combination of car B having sections b and b_1, and shoe B_1, with the car A having the standard A_1, the arm A_2 proveded with the rake a_2, the wheels c and C, and the chains C_2, C_3 and C_4, substantially as and for the purposes specified. 5th. In a snow-excavating apparatus, the frame f having the pivoted dumping sections b and b_1, provided respectively with partitions b_2 and b_3 and the sheaves c_2 and c_3, as described, in combination with a windi ig mechanism and a chain or chains running in the sheaves beneath the bed-frame, and connecting suchwinding mechanism with the outer edge and under surface of the dumping sections, substantially as and for the purposes

No. 28,011. Creamer. (*Garde-lait.*)

George Pulfer, Brampton, Ont., 16th November, 1887 ; 5 years.

Claim.—1st. In a creamer, the combination of a cabinet A having shelf A_1, tank B in the upper space, having front b partly sloping, and partly vertical drain tap B_1, milk can C having sloping bottom C_1 curved in cross section, sight-glass D_{11} and faucet E, secured on plate D having nipples projecting through perforations in can and tank, substantially as set forth. 2nd. In a creamer, the combination of the cabinet A having spaces a and a_1, cover A_{11}, door A_{111} extending over space a_1 and partly over space a, tank B b and can C, provided with sight-glass and faucet projecting through tank front by tight joints, substantially as set forth. 3rd. In a creamer, the combination of a tank front b, can C, plate D having nipples d, d_1, glass D_{11}, screw ring D_{111}, flanged nut D_1 and faucet E, substantially as set forth. 4th. The combination of the plate D having nipples d, d_1, flanged ring nut D_1, glass D_{11}, and screwed washer ring D_{111}, substrntially as set forth.

No. 28,012. Steam Engine. (*Machine à vapeur.*)

Samuel E. Jarvis, Lansing, Mich., U. S., 16th November, 1887 ; 5 years.

Claim.—1st. In a sliding cover engine, a cylinder head having an elongated slit, and a contracted flat inner face, and provided with a flat sliding cover seated against the contracted inner face of said cylinder, substantially as described. 2nd. In a sliding cover engine, a cylinder head in the form of a conical frustrum, provided with an elongated slit, and with a sliding cover against the inner contracted face of said cylinder head, substantially as described 3rd. In a sliding cover engine, the combination of a cylinder head having an elongated slot, a flat sliding cover seated against the flat inner face of said cylinder head, and having a ball-shaped aperture, a stuffing-box provided with a ball-bearing engaging into said aperture, and a spring interposed between the cylinder head and the stuffing-box, substantially as described. 4th. In a sliding cover engine, the combination of a fixed cylinder head, in the form of a conical frustrum, and provided with an elongated slit, a sliding cover seated against the inner face of said cylinder head and provided with an elongated slit, a sliding cover seated against the inner face of said cylinder head and provided with an aperture forming the socket of a ball and socket bearing, a stuffing box engaging into said aperture by means of a ball-bearing, and a conical coil spring interposed between the cylinder head and the stuffing-box, substantially as described. 5th. In a sliding cover engine, a piston head consisting of a central disk fixedly secured to the piston rod, and an annular outer cylinder with a ball and socket bearing formed between said disk and cylinder, and a spring around said rod, substantially as described. 6th. In a sliding cover engine, a piston head consisting of a central disk fixedly secured to the piston rod, and provided with a ball-bearing around its circumference, and of an annular outer cylinder provided upon its inner face with a socket bearing for the central disk, substantially as described. 7th. In a sliding cover engine, the combination of the cylinder, the conically depressed cylinder heads, the sliding-cover seated against the inner face of one of the cylinder heads, and the T-shaped piston head, substantially as specified.

No. 28,013. Manufacture of Gas.

(*Fabrication du gaz.*)

Arthur G. Meeze, Redhill, Eng,, 16th November, 1887 ; 5 years.

Claim.—The process or method of manufacturing gas from coal, shale or similar material, by passing the richer first products of distillation in contact with superheated steam through a suitable thermolysing chamber, and afterwards enriching the poorer distillate with an injection of fluid hrdro-carbon, substantially as described and for the purpose set forth.

No. 28,014. Article of Manufacture to Attach to Single Harness for the purpose of Supporting or Holding in their proper place the Shafts or Thills of a Carriage or other Vehicle. (*Dossière de harnais.*)

Thomas Foster, Lindsay, Ont., 15th November, 1887 ; 5 years.

Claim.—As a new article of manufacture, a harnass-shaft holder having buckle B, center-bar C, tongue D, holder A and loop E, constructed and arranged as described and shown.

No. 28,015. Clevis. (*Chaînon de palonnier.*

James A. Rooney, Strathroy, Ont., 19th November, 1887 ; 5 years.

Claim.—The combination of the two parts B, B, the shoulders C, C, the guards K, K, the hook G, the open space M, the pen F and the connection E, E, substantially as and for the purpose hereinbefore set forth.

No. 28,016. Photography. (*Photographie.*)

The Universal Color Company, (assignee of Armand M. Jacobs), New York, N.Y., U.S., 18th November, 1887 ; 5 years.

Claim.—1st. The new process of photography, which consists in coating a suitable surface upon which it is desired to produce a photograph with a solution of a resinate of a metal or of an organic base, subjecting the prepared surface then to the action of light, as described, and then to the action of a suitable agent to obtain a negative or a positive of an object as desired, substantially as set forth. 2nd. In the art of photography, the employment of a resinate as the essential sensitising medium, substantially as and for the purpose set forth. 3rd. As a new article of manufacture, a resinate photograph, substantially as described.

No. 28,017. Combination Table.

(*Table à combinaison.*)

Edwin Harrison, London, Ont., 18th November, 1887 ; 5 years.

Claim.—1st. In combination with the top A B of a centre-table, the wings D, D hinged thereto, and provided with shelves, drawers or compartments b, b, and extension pieces E, E, substantially as shown and specified. 2nd. In combination with the above-described table top A, B and wings D, E, the drawer C, the top whereof forms a writing desk, substantially as shown and specified.

No. 28,018. Sulky Plough. (*Charrue à siège.*)

Anson T. Button, Uxbridge, Ont., 18th November, 1887 ; 5 years.

Claim.—1st. In a sulky plough, the leeding or furrow wheel D connected to the shafts F, which are journalled in the front of the frame A, in combination with the rod H and hand-lever I arranged and operating, substantially as and for the purpose specified. 2nd. In a sulky plough, the spindle E of the wheel D journalled in the bracket

G, and having a collar a fixed to it, in combination with a spiral spring b located between the collar a, and the bottom of the bracket G, substantially as and for the purpose specified. 3rd. The wheel B journalled in the crank shaft C, which is journalled in the frame A, in combination with the foot-lever L and hand-lever J, arranged substantially as and for the purpose specified.

No. 28,019. Fluid Pressure Railway Brake.

(*Frein atmosphérique de chemin de fer.*)

George Massey, Sydney, N.S.W., 18th November, 1887; 5 years.

Claim.—1st. The combination and arrangement with the main reservoir, and the small or carriage reservoirs, of a supplemental supply pipe with coupling, and branches connecting the main reservoir or pressure supply with each of the small reservoirs, substantially as herein described and explained. 2nd. The combination and arrangement with a supplemental supply pipe, connecting the main and small reservoirs of a Westinghouse brake, of a loaded valve and back pressure valves, substantially as herein described and explained.

No. 28,020. Pressed Brick Making Machine.

(*Machine à brique pressée.*)

William S. Smith and James M. Smith, Galt, Ont., 18th November, 1887; 5 years.

Claim.—1st. In a pressed brick-making machine, a movable shaft Q actuated by crank-shaft P, and carrying a series of pivoted lever arms, whereby an up and down motion is given both to the upper plungers B and the lower plungers C, so that they will approach each other and press the brick, and recede from each other after the brick is pressed by the continuous revolution of the geared drive wheel N, as set forth. 2nd. A pressed brick-making machine, constructed substantially as herein shown and described, consisting of upper plungers, in a frame adapted to move in vertical ways by means of compound levers, the same power or motion communicated from the main geared driving wheel, which causes the upper plungers to rise and fall, causing the lower plungers to rise and approach the upper plungers, so as to compress the clay in the mould openings, and to cause the upper and lower plungers to recede from each other after the clay has been pressed in the moulds, adjusting the distance between the plungers by threaded nuts and movable collars on pressure rods for lower plungers regulating the amount of clay supplied to the moulds by raising or lowering a movable frame for lower plungers, a reciprocating feed frame adapted to carry clay from hopper to the mould openings, intermittently after the clay has been pressed into bricks and to shove the pressed bricks onto a discharge table, a pivoted lever actuated by a revolving arm to raise the brick when pressed to the plane of discharge table, a device for automatically sanding the top and bottom of clay before pressure, and a carrier on endless belt provided for carrying clay to hopper, substantially as described and specified. 3rd. The combination, with the crank-shaft P, driven by the main geared driving wheel, of the pivoted lever arms a and b, movable shaft Q, hinged pressure frame R and R_1, hinged at Z and pivoted to upper plunger frame S, and the upper plunger B and mould opening E designed to hold clay, substantially as specified. 4th. The combination, with the crank-shaft P, driven by main geared driving wheel, of pivoted arm U, movable shaft Q, movable arm V pivotally attached to movable shaft Q, and eccentric cam W pivoted on fixed eccentric cam shaft T, pressure rods X fitted into caps d, d_1 and designed to raise and lower in ways T, the lower plunger-frame C_1 and movable plunger frame C_2 carrying movable lower plungers C, which are adapted to move in the mould openings E which hold the clay, substantially as specified. 5th. The combination, with the crank-shaft P, of the pivoted lever arms a and b, movable shaft Q, hinged pressure-frame R and R_1, hinged at Z, the upper plunger frame S and plungers B, ways T, the pivoted arm U, movable arm V pivotally attached to movable shaft Q, and eccentric cam W pivoted on eccentric cam-shaft T, pressure rods X fitted into caps d, d_1 and designed to raise and lower the lower plunger-frame C_1, carrying lower movable plungers C, which are adapted to move in the mould openings E, which hold clay, substantially as and for the purpose specified. 6th. The combination, with the pressure-rods X, threaded at each end of the cap d, pivotally attached to eccentric cam W, the cap d_1, nuts f, f_1 movable collars g, g_1, with set-screws g_2 and lower plunger-frame C_1 adapted to move in ways, substantially as and for the purpose specified, 7th. The combination, with the spindle h journalled in main frame, of the hand-wheel h, mitred gear pinions h_2, h_3, shaft i threaded at one end and working through a collar formed at one end of pivoted bar f, the link k, handle l adapted to move through slot m and the movable lower plunger frame C_2, substantially as specified. 8th. In combination with the pivoted bar j, the free end of which is designed to move up and down, as specified, the indicator m_2 fixed to the free end of said pivoted bar j and the graduated scale n placed on the main frame of the machine, substantially as described and for the purpose specified. 9th. The combination with cam q, having cam-groove q_1 and driven by the main shaft of pivoted lever-arm r, cam groove roller q_2, link r_2 pivotally connected with lever arm r and bell-crank lever s pivoted on shaft m_1 and pitman t pivotally attached to bell-crank lever s and reciprocating feed frame G, whereby a reciprocating and intermittent motion is given to the feed frame, which carries clay from the hopper to the mould openings, substantially as specified. 10th. The combination of a reciprocating feed-frame G adapted to move on guide-rods H and having bottom board G_1 designed to open and close the bottom of clay hopper p, a cam driven pitman t pivotally attached to said feed-frame and giving a reciprocating and intermittent motion to said feed frame G, which carries clay from the hopper to the mold openings, substantially as specified. 11th. The combination, with the compartment for sand p_1, situate in front of and adjoining the clay hopper of the false bottom Q, with sliding panel 3 operated by fingers 7 on spindle 4, to which an intermittent and rocking motion is given by dog 5, engaging with depression 6 in reciprocating feed-frame G and arm 14 and spring 13, whereby said is intermittently admitted from the sand hopper or compartment to the sand box F, and brush 9 on spindle 10 journalled in the sand-box F, and wheels 11 fixed on said spindle and adapted to roll on track 12 and cause the brush to rotate and distribute the sand evenly through the open or grated bottom of sand-box F, substantially as described and for the purpose specified. 12th. A device for sanding the top and bottom of the clay in the mould openings prior to compression into bricks, consisting of a hopper for sand situate in front of and adjoining the clay hopper with a sliding panel in the bottom adapted to be moved to one side intermittently by spring and dog engaging with the reciprocating feed frame, so as to admit sand to a sand box situate in front of and forming part of the feed-frame and containing a brush on a spindle journalled in said box and caused to rotate for the purpose of keeping the sand in motion within sand box, and to distribute it evenly through the open or grated bottom of the sand box so as to sand the top and bottom of the brick, substantially as described and for the purpose specified. 13th. The combination, with discharge arm w adapted to revolve on the main shaft O, the pivoted discharging lever n centrally pivoted, the roller n_2 and roller c_3, movable lower plungers C, adapted to move vertically in ways and through mould openings E, so as to bring the pressed brick up to the plane of the discharge table D, and permit the reciprocating feed frame to automatically shove the pressed bricks onto the discharge table, substantially as specified. 14th. A movable lower plunger, carrying a die on which the pressed brick rests, and adapted to be moved vertically through the mould opening, so as to bring the pressed brick to the same plane as the discharge table and to become automatically reseated in its normal position by the force of gravity, after the brick has been pushed into the discharge table, substantially as specified. 15th. In combination with the carrier o on an endless belt adapted to move on rollers o_1, o_2 journalled on the main frame and actuated by suitable gearing, the clay hopper p and reciprocating feed-frame G, carrying bottom board G_1, and designed to move in an intermittent manner by cam-actuated mechanism, substantially specified.

No. 28,021. Substitute for Leather.

(*Substitut pour le cuir.*)

Maximilian Zingler, London, Eng., 18th November, 1887; 15 years.

Claim.—1st. In the manufacture of substitutes for leather, the preparation of canvas or like woven fabric, by first boiling it in a solution of tungstate of soda, secondly boiling it in a solution of acetate of lead then draining drying, stretching the same, and coating it with a compound of india rubber, sulphuret of antimony, peroxide of iron, sulphur, lime, asbestos, and carbonate of magnesia, in the proportions specified suitably prepared, and, lastly, vulcanizing the whole, as set forth. 2nd. As a new article of manufacture, canvas or like fabric, prepared substantially in the manner hereinbefore described, coated with a compound of india rubber, sulphuret of antimony, peroxide of iron sulphur, lime, asbestos and carbonate of magnesia, as set forth, and the whole vulcanized.

No. 28,022. Roller Mill. (*Moulin à rouleaux.*)

William F. Cochrane, Cambridge, Ind., U. S., 18th November, 1887; 5 years.

Claim.—1st. The combination, with the journal boxes supporting the rear roll and the connecting bar, the beveling screws, clamping screw and the horizontal adjusting screws extended through and taking a bearing in the front plate of the frame, substantially as described. 2nd. The combination, with the frame and the rear roll, the journal boxes connected together and provided with dependent lugs, and the adjusting screws engaging said lugs and passing through the front of the frame, substantially as described. 3rd. The combination, in a roller mill, such as described, of the front or movable roll, the pivoted carriers and the rock-shaft bearing pins engaging slots in the carriers, substantially as described. 4th. The combination, in a roller mill, such as described, of the frame, the rear roll supported thereon, and the front roll mounted upon carriers pivoted upon brackets to bring the boxes in line, substantially as described. 5th. In a roller mill, such as described, the combination, with the pivoted roll carriers and the rock-shaft, the collars movably secured to the rock shaft, and provided with pins entering and engaging the walls of slots in the lower ends of the carriers to actuate the latter and adjust the roll, substantially as described. 6th. In a roller mill, such as described, the combination, with the pivoted roll carriers, the rock-shaft and independent crank pins engaging said carriers, a tension device applied to said rock-shaft to hold the roll in adjusted position, substantially as described. 7th. In a roller mill, such as described, and in combination with the movable roll, its pivoted carriers and the rock-shaft engaging both of said carriers to simultaneously adjust the latter, an arm secured to said rock-shaft, a link connected to said arm, and bearing a nut or stop, a spring and an expansible connection interposed between the spring and nut or stop, substantially as and for the purpose set forth. 8th. In a roller mill, such as described, and in combination with the pivoted roll carriers, the rock-shaft controlling the movement of said carriers, and the arm secured to said rock-shaft, the pivoted link provided with the adjusting nut, the cam lever, the cam plate and the tension-spring, substantially as described. 9th. In a roller mill, such as described, and in combination with devices for supporting the movable roll, the link or rod connected to the roll adjusting mechanism, and carrying a stop, the tension spring and the cam lever and cam plate, the cams or inclines on one of the latter, provided with notches or shoulders for engaging the opposite inclined, substantially as described. 10th. In a roller mill, such as described, and in combination with the rolls thereof, connecting gears mounted upon the frame and supported in fixed relation to each other, and hollow toothed couplings engaging toothed sections on the gears, and rolls to communicate motion from one to the other and permit the roll to be adjusted laterally of the gears, substantially as described 11th. In a roller mill, such as described, and in combination with the rolls thereof, the gears for communicating motion from one roll to the other mounted upon independent bearings or studs, and connected to the rolls by flexible couplings, substantially as described. 12th. In a roller mill, and in combination with the rolls thereof, the driving pulley and connecting gears mounted on independent supports at opposite ends of the

rolls, and flexible couplings, such as described, for connecting the driving-pulley to one of the rolls, and each of the latter to one of the gears, substantially as and for the purpose set forth. 13th. In a roller mill, such as described, and in combination with the adjustable rolls thereof, provided with coupling sections, the yoke secured to one end of the frame, and carrying a stud axle on which a pulley is mounted, said pulley being connected to the coupling section on one roll by a tubular coupling, and a yoke secured to the opposite end of the frame, and provided with stud axles and gears, the latter connected to the end of the rolls by flexible couplings, substantially as described.

No. 28,023. Gearing. (*Engrenage.*)

William F. Cochrane, Cambridge, Ind., U.S., 18th November, 1887; 5 years.

Claim.—1st. In a system, substantially as herein described, wherein the rolls are driven directly from parallel shafts, and in combination with said shafts and a counter shaft carrying the driving pulley, of the gears for communicating motion from the countershaft to both driving shafts, substantially as described. 2nd. In a system, such as described, and in combination with the hollow adjustable rolls, the driving shaft passing through each of said rolls, and the frame supporting the rolls and driving shafts, of a gear frame detachably secured to the roll frame and carrying a countershaft, pulley and gears engaging gears on the driving shaft, substantially as described. 3rd. In combination with the end-piece A of the roll frame, the hollow stays secured to said frame by the through rods, the bearing blocks mounted upon said stays and supporting the parallel driving shafts, the gear wheels secured to said driving shafts, and the countershaft also supported in said bearing blocks and provided with the pulley and pinions engaging the gears on the driving shafts, substantially as described. 4th. The improved detachable gear frame, constructed for application to a frame, substantially as herein described, and consisting essentially of the hollow stays provided with vertical sockets, the bearing blocks with posts adjustably secured in said sockets, said blocks being connected together, and provided with bearings for the two parallel driving shafts and the transverse countershaft, the whole being arranged and combined together, and with the driving shafts, their gear wheels and the countershaft and its pinion, substantially as and for the purpose set forth. 5th. In combination with the sectional frame composed of the end-pieces A, sleeves A^1 and through rods A_3, of the tubular stays A_2 secured by the through rods to the end-piece A, and provided with vertical sockets, and the vertically adjustable gear frame mounted upon said gears A_2, and provided with the bearing blocks supporting the driving shafts C and countershaft, the latter provided with a driving pulley or its equivalent and gearing connecting it to both shafts C, substantially as described. 6th. In combination with the adjustable hollow roll, and the driving shaft passing longitudinally through the same, and supported in bearings independent of the roll, a spring connecting the roll and shaft for communicating motion from one to the other, substantially as described. 7th. In combination with a hollow roll mounted in adjustable bearings, the shaft passing through said roll, and supported in independent bearings, a clutch on the said shaft, and a spring connection between the clutch and roll for driving the latter, substantially as described. 8th. In combination with the hollow roll mounted in adjustable bearings, and provided with the collar secured to one end, the driving shaft passing through said roll, the clutch mounted upon said shaft and a coiled spring surrounding the shaft and attached to the collar and clutch, substantially as and for the purpose set forth. 9th. The combination with the two hollow rolls mounted in adjustable bearings, and the two inner or back rolls mounted in fixed bearings, of the parallel driving shafts, each passing through one of the hollow rolls, a flexible coupling for connecting each hollow roll to its shaft, a pulley or sprocket wheel mounted on each shaft, and a belt or chain passing around said pulley, and a pulley on the inner roll of the opposite set or pair, substantially as described. 10th. In a system, such as described, wherein two sets or pairs of rolls are mounted in a single frame, the combination, with the outer adjustable hollow roll of one of said sets, and the driving shaft passing through said roll and connected thereto, of a belt or chain extending from a pulley on said driving shaft to a pulley on the inner roll of the opposite set, substantially as and for the purpose set forth. 11th. The combination, with the two inner rolls and their pulleys, the two hollow outer rolls mounted in adjustable bearings, and the driving shafts passing through the said hollow rolls, of the flexible coupling connecting each hollow roll to its driving shaft, a pulley mounted upon each driving shaft, and a belt connecting the pulley on the driving shaft of one set of rolls with the pulley on the inner roll of the opposite set, substantially as and for the purpose set forth. 12th. In a system such as described, and in combination with the double set of rollers, the two driving shafts, each passing through the adjustable roller of one pair or set, and connected thereto by a flexible coupling, and to the inner adjustable roller of the opposite set by belt or chain gearing, and the shaft driven from a prime motor and connected through gearing to the two roll driving shafts, substantially as described. 13th. In combination with the driving shaft clutch and relief mechanism, substantially such as described, the spring applied to the shaft and pressing against the movable section of the clutch thereon, as and for the purpose set forth. 14th. In combination with the shaft of the relief mechanism, substantially such as described, of the arm carrying the cam lever engaging a bearing on the frame, substantially as and for the purpose set forth. 15th. The improved compound and frictional and interlocking clutch, constructed and combined substantially as described, the opposite sections of said clutch being formed with the bevel-ended interlocking projections or jaws, and widened spaces, substantially as and for the purpose set forth. 16th. In combination with the shaft and its bearing, the hoods or rims applied to the end of the bearing, and operating to receive the oil thrown off from the shaft, substantially as described.

No. 28,024. Roller Mill. (*Moulin à rouleaux.*)

William F. Cochrane, Cambridge, Ind., U.S., 18th November, 1887; 5 years.

Claim.—1st. The combination in a system, such as described, and with the series of feeding rolls, flexible driving connections or wablers interposed between the ends of contiguous rolls, and a driving mechanism or pulley common to the whole series, substantially as described. 2nd. In a system, such as dsscribed, and in combination with a series of grinding or crushing rolls, a series of hollow feed-rolls, each supported in bearings and a sectional driving shaft extending through the series of feed-rolls, and flexible connections uniting the contiguous ends of the shaft sections, substantially as described. 3rd. In a system, such as described, and in combination with the series of hollow feed-rolls, and the sectional driving shaft extending through said feed-rolls, and united by flexible couplings or warblers, a series of clutch sections mounted on the driving shaft each adapted to engage a clutch section on one of the rolls, substantially as described. 4th. In combination with a hollow feed roll, mounted in bearings secured to the sides of the hopper or casing, the clutch section attached to one end of the roll, a sliding clutch section with spring and shipper, and a driving shaft passing through the clutch sections and hollow rolls and having its bearing in the latter, substantially as described. 5th. In a system such as described, and in combination with the series of hollow feed rolls, supported in independent bearings, and each provided with a clutch section, a driving shaft for each roll extending through the latter and carrying a clutch section co-operating with that on the roll and a shaft interposed between the proximate ends of contiguous roll, driving shafts and connected to the latter by collars having interlocking projections, substantially as described. 6th. In a roller mill, such as described, and in combination with the movable bearings supporting the rear roll, an adjusting lever for actuating the bearings of the movable roll, said lever being extended across to the front of the frame, substantially as described. 7th. In a roller mill, such as described, the combination, with the front roll mounted in stationary bearings and the rear roll in movable bearings, a lever engaging said movable bearings and extended across from the rear to the front of the frame, and a tension device interposed between the frame and the end of the lever, substantially as described. 8th. In a roller mill, such as described, and in combination with the movable bearings carrying the back roll, the shaft pivotally supported in rear of and below said roll and connected to the bearings, and the actuating lever secured to the rock-shaft and extending beneath the rolls and through the front of the frame, substantially as described. 9th. In a roller mill such as described, and in combination with the bearings of the adjustable roll, and the pivoted actuating lever engaging said bearings, the spring, the adjustable collar and an expansible connection interposed between the lever and a stationary part of she frame, substantially as described. 10th. In a roller mill, such as described, and in combination with the bearings of the adjustable roll, and the actuating lever extended across and projected beyond the front of the frame, a tension spring interposed between the end of the lever, and an adjustable bearing or plate, and a cam engaging said bearing to compress the spring for holding the roll up to its work and to relieve the pressure and permit the roll to yield, substantially as described. 11th. In a roller mill system such as described, and in combination with a series of pairs of rolls, one member of each pair mounted in movable bearings, and the rolls of each set varying in diameter proportionally to the speed of the driver to produce the desired differential peripheral velocities, the flexible couplings or wablers interposed between and connected to the ends of contiguous rolls, substantially as and for the purpose set forth. 12th. In a system such as described, and in combination with the two parallel lines of rolls arranged in sets, the corresponding rolls of all the sets being in the same line, a driving pulley or gear connected directly in the line of rolls, rotating at the higher speed a counter-shaft or its equivalent connected directly in line with the series of rolls rotating at the lesser speed, and a gear on the quick line meshing into a larger gear on the counter-shaft in the line of slower rolls, substantially as described. 13th. In a system such as described, wherein a series of pairs of rolls are arranged in line, the corresponding rolls of each pair being driven at the same speed, and the front and rear rolls at different speeds, the rolls of each pair varying in diameter to produce the desired differential surface movement and in combination with said series of rolls and the bearings in which they are supported, a flexible coupling interposed between the proximate ends of contiguous rolls in each line, a driving gear or wheel for each line of rolls, and a pulley or main driver applied to one line of rolls and communicating motion to the other through the first-mentioned driving gears or wheels, substantially as described. 14th. The combination in a system such as described, and with the contiguous rolls of the series mounted in boxes, and arranged end to end in line, the coupling sections secured to the ends of the rolls, the interposed shaft carrying a fast and a loose coupling section, and the movable clutch section mounted on the shaft and engaging a clutch section connected to the loose coupling section, substantially as described. 15th. In a system such as described, and in combination with the series of pairs of rolls arranged in line, a flexible coupling interposed between the proximate ends of contiguous rolls and a starting clutch substantially such as described, for connecting the flexible coupling and roll, as and for the purpose set forth.

No. 28,025. Cigar Lighter. (*Allume-cigare.*)

George S. Conover and William W. Conover, Toronto, Ont., 18th November, 1887; 5 years.

Claim.—1st. A piece of inflammable material secured to the end of a cigar or cigarette, and having placed on its outside any suitable composition, which will ignite by friction, substantially as and for the purpose specified. 2nd. A piece of inflammable material B, provided with laps *a* gummed or otherwise connected to the end of a cigar or cigarette, and having placed on its outside, substantially at the centre of the end of the cigar, a piece of composition C, which will ignite by friction, substantially as and for the purpose specified.

No. 28,026. Mouse and Dust-proof Attachment for Organs. (*Garde-souris et garde-poussière pour orgues.*)

Alexander Marcy and Herman B. Marcy, Clinton, Ont., 18th November, 1887; 5 years.

Claim.—1st. The combination in a mouse and dust proof attachment, of the toe-piece A, the end or side piece B, the metal pedal frame in the pedal H, the case E, the block K and the rubber face L, as shown and described for the purposes set forth. 2nd. The combination in a mouse and dust proof attachment, of the toe-piece A, the end or side piece B, the screw *c*, the pedal H, the case E, the block K and the rubber L, as shown and described for the purposes set forth. 3rd. The combination in a mouse and dust proof attachment, of the toe-piece A, the end or side piece B, the screw D, the pedal H, the screw c and the case F, as shown and described for the purposes set forth. 4th. The combination in a mouse and dust proof attachment, of the toe-piece A, the pressed down pedal J, the screw c, the end or side piece B, the screw D and the case E, as shown and described for the purposes set forth. 5th. The combination, in a mouse and piece A, end or side piece B, pedal A, metal pedal frame in case E, block K, rubber face L, screw D, pressed-down pedal J and the screw c, as shown and described for the purposes set forth.

No. 28,027. Process and Apparatus for Procuring Aluminum. (*Procédé et appareil de production de l'aluminum.*)

Moses G. Farmer, Eliot, Me., U.S., 18th November, 1887; 5 years.

Claim.—1st. The herein described process of procuring aluminum, which consists in combining a substance in which it is contained with pulverized carbon, forming the mixture into rods or cylinders, and then subjecting the extremities of said rods to the heat of the electric arc, substantially as described. 2nd. The herein described process of reducing ores containing aluminum, which consists in placing the same within a tubular electrode, and then burning the electrode in the voltaic arc, substantially as described. 3rd. The herein described process of obtaining aluminum, which consists in charging an ore containing aluminum into a tubular combustible electrode, projecting said electrode into a heat-retaining chamber, in juxtaposition with a second electrode, and subjecting the said electrodes to the action of a voltaic arc established between their extremities, substantially as described. 4th. The herein described process of procuring aluminum, which consists in mixing a substance containing aluminum with powdered carbon, forming the same into rods or cylinders, projecting two of said rods into a heat-retaining chamber, and then passing an electric current through the rods and establishing an arc between their extremities, substantially as described. 5th. The herein described method of reducing ores containing aluminum, which consists in charging the material into a combustible tubular electrode, projecting said electrode into a heat retaining chamber, and into juxtaposition with a second combustible electrode, establishing and arc between the extremities of said electrodes and supplying a jet of de-oxidizing vapor to the point of combustion, substantially as described. 6th. The combination with a furnace, and means, substantially as described, for supporting and feeding the same, of a tubular positive electrode, provided with a filling of ore containing aluminum, a negative electrode and circuits, and connections for passing a continuous current through the electrodes, consuming them together with the filling, substantially as described. 7th. The herein described process of obtaining aluminum, which consists in combining a substance containing aluminum, with powdered gas carbon, and forming the same into rods or cylinders, passing two of said rods into a heat retaining chamber, and passing an electric current therethrough, so as to form an arc within said chamber, and injecting into the arc an inflammable vapor for increasing its temperature, substantially as described. 8th. The herein described furnace, consisting of a body of refractory material, formed with a central combustion chamber, an upward extending opening to permit the escape of gases, a downward extending opening to allow the molten metal to flow out, lateral oppositely located openings to receive charging cylinders, charging cylinders forming electrodes, circuit connections between the electrodes and a suitable source of electricity, and a motor device for feeding the electrodes towards each other, and an additional lateral opening for an injector nozzle at right angles to the charging apertures, substantially as shown and described. 9th. The combination of a furnace, having vertical and lateral apertures, of the charging carbons entering said furnace through the lateral apertures, the spraying nozzle entering at right angles to the carbons, means, substantially as described, for automatically feeding the carbons together, said means, consisting of a motor in circuit with a separate source of electricity, and a switch lever operated by a solenoid in a derivation from the main circuit for controlling the operations of the motor in accordance with the resistance of the arc, as set forth.

No. 28,028. Gearing and Relief Mechanism for Rolls. (*Engrenage et mécanisme de renfort pour moulins à blé.*)

William F. Cochrane, Cambridge, Ind., U.S., 18th November, 1887; 5 years.

Claim.—1st. An improved frame for roller mills, such as described, the same consisting essentially in the combination with the duplicate side bars, adapted to receive the bearing of the rolls, and provided with the vertical end brackets of the tubular cross-pieces fitted to the end brackets and web, and the bolts passing through the cross pieces and serving to clamp the side bars thereon, substantially as described. 2nd. The improved frame for roller mills, constructed substantially as hereinbefore described, of the duplicate side bars, tubular cross-bars and through rods, the whole combined, arranged and applied, substantially as set forth. 3rd. Side bars 1, composed to the web e for the reception of the fixed and adjustable bearings of the rolls, vertical bracket e^1, having sockets C^5, and sleeve e^6, and the intermediate bearings e^3, combined with the tubular cross-bars 2 and 3, and through rods 7 and 8, substantially as described. 4th. In a roller mill, such as described, and as a means for sustaining the rolls, their bearings and adjusting mechanism, the improved sectional frame, consisting of the duplicate side pieces 1, the tubular cross-bars connecting said side pieces, and the through rods for uniting and firmly clamping the parts together, the whole constructed and combined substantially as described. 5th. The combination to form a frame for the reception of a roller mill, such as described, together with its adjusting and relief mechanism bearings, and provided with the recess at the end for the reception of the disk of the relief mechanism, and the vertical brackets having the sleeves for the adjusting devices and transverse sockets at their upper ends, said side-bars being connected and clamped together by the tubular cross-bars and through bolts, all combined and arranged, substantially as described. 6th. The combination, to form a frame for a series or system of roller mills, such as described, of the duplicate side bars 1 and tubular cross-bars, with the tubular stays interposed between the side bars of contiguous frames, and the rods passing through the side bars, cross bars and stays of the series to unite and bind together the several frames in a connected series, substantially as set forth. 7th. In a roller mill, wherein a series of pairs of rolls arranged in line and driven from a shaft passing through the adjustable rolls of the series are mounted upon side bars 1, connected together by cross-bars, as described, and in combination with the contiguous side bars of successive frames, the tubular stays connecting said frames, and arranged in line with the tubular cross-bars, the through rods passing through the said stays, cross-bars and side bars, the steps formed upon the lower stays, and bearing for supporting the driving-shaft mounted in said steps, substantially as described. 8th. In combination with a series of side bars 1, arranged in pairs and connected by cross bars, each pair of side bars supporting a pair of rolls, substantially as described, of stays connecting the side bar of one pair with the side bar of the next succeeding pair, rods for clamping the several pairs of side bars together to form a continuous frame, bearings mounted upon the stays, and a driving shaft supported in said bearings and passing through the hollow adjustable rolls of the series, as and for the purpose set forth. 9th. The combination to form a continuous frame for a series of pairs of rollers arranged in line and driven from a single shaft, substantially as described, of a series of side bars 1 arranged in pairs, the side bars of each pair being connected together by tubular cross-bars, and to the side bar of the next succeeding pair by tubular stays applied in line with the tubular cross-bars, and sectional clamping rods extending through each series of stays and cross rods, as and for the purpose set forth. 10th. In a system, such as described, and in combination with the frame of the mill and its stays, the pulley-frame removably secured to said stays, substantially as described. 11th. In a system, such as described, and in combination with two sets of rolls and their fixed and adjustable bearings mounted upon a single frame, the parallel driving shafts, each passing longitudinally through one series of adjustable rolls and supported in fixed bearings, the pulleys mounted upon said shafts, the adjustable tightener pulley located beneath said shafts, and the driving belt passing beneath the tightener pulley and over the front and beneath the rear driving pulley, substantially as and for the purpose set forth. 12th. The improved detachable pulley frame for roller mills, constructed substantially as hereinbefore described, and consisting essentially of the end plates, and upper and lower divided side bars bolted together, the hangers adjustably held between the sections of the upper side bars, the links pivoted to the lower side bars and carrying the frame for the tightener pulley, as and for the purpose set forth. 13th. In combination, with the parallel driving shafts and their pulleys, the adjustable bearings applied to each shaft at opposite ends of the pulleys, the hangers for supporting said bearings, provided with cylindrical posts, the parallel timbers constituting the side bars of the pulley-frame with their proximate faces grooved for the reception of the posts of the hangers, the clamping bolts and the end plates to which the side bars are secured, the whole constructed, arranged and applied, substantially as set forth. 14th. In combination with the rolls, their fixed and adjustable bearings, the frame supporting said bearings, and the driving shaft passing longitudinally through the hollow adjustable roll, substantially as hereinbefore described, of the divided bearings applied to the shaft and pivotally supported upon set screws in a yoke, the latter being provided with a post adjustably secured in a socket formed on the stay rod projecting from the frame, substantially as and for the purpose set forth. 15th. The combination in a roller mill, and with the adjustable bearings of the roll, the slotted frame supporting said bearings, the driving shaft and the clutches, substantially as described, of the improved relief mechanism, comprising the toothed disk mounted upon a shaft and located within a recess in the frame, the latch connecting the said disk and movable bearing, the sleeve carrying the slipper mounted upon the before mentioned shaft, and provided with the toothed end co-operating with the disk, substantially as described.

No. 28,029. Gearing and Relief Mechanism for Roller Mills. (*Engrenage et mécanisme de secours pour moulins à blé.*)

William F. Cochrane, Cambridge, Ind., U.S., 19th November, 1887; 5 years.

Claim.—1st. The improved frame for a system, such as described, composed of the girders A, A and the angle iron cross-pieces B, B, for reception of the bearings for the rolls, substantially as described. 2nd. In combination with the parallel girders A, the angle iron cross-pieces B fitted between the said girders and secured thereto by hooked bolts, substantially as described. 3rd. In a system, such as described, wherein a series of pairs of rolls are arranged in line and driven from two parallel shafts passing through the rolls, the combination with the rolls and driving shafts, and as a means for supporting them in position, of the frame composed of the two girders A and detachable cross-pieces B, substantially as described. 4th. In combination with the parallel girders A and relatively narrow cross-pieces B having the flange *b* at the top and secured to the girders A by bolts, as described, of the bearings 1 secured to the cross-pieces B, the adjustable bearings 3 mounted upon said cross-pieces and provided with cylindrical hubs, fitting elongated slots therein, and the separable sleeves secured to the front girder A and carrying the tension springs for holding the bearings in adjusted position, substantially as and for the purpose set forth. 5th. In combination with the slotted cross-pieces and the movable bearings mounted thereon, and provided with the dependent ribs 7 and cylindrical hubs fitting said slots, of a relief mechanism, substantially such as described,

connected to the movable section of the clutch, and provided with the actuating disk, having the inclined teeth or cams, said disk being connected directly to the dependent ribs on the movable bearing, substantially as and for the purpose set forth. 6th. In combination with the fixed and movable bearings of a pair of rolls, and the adjustable tension springs engaging said movable bearings, of the set screw for determining the position of the said movable bearing, substantially as described. 7th. In combination with the movable bearing of the adjustable roll, adjustable stop for limiting the movement of the said bearings in one direction, and an adjustable tension spring acting upon each bearing to hold it in adjusted position, substantially as and for the purpose described. 8th. In combination with the longitudinal girders A and cross-pieces B, united, as described, to form a series of frames for the reception of a series of pairs of rollers, of the parallel drawing shafts, each passing through one roller of each pair, the driving pulleys secured to said shaft, the detachable pulley frame carrying bearings for the shafts and secured to the ends of the girders A, substantially as described. 9th. In a system, such as described, wherein the driving shafts pass longitudinally through the front and rear rolls respectively, of a series of pairs of rolls arranged in line, the combination with said parallel driving shaft, of a series of pairs of rolls, the rolls of each pair being proportioned to each other and to the speed of their respective driving shafts, substantially as described, to produce the desired differential, peripheral speed, as and for the purpose set forth. 10th. The combination, with two lines of shafting located in parallel planes and supported in fixed bearings, of a series of rolls mounted upon one of said shafts, and each connected thereto through a clutch, a second series of hollow rolls mounted in adjustable bearings, and embracing the other shaft, to which latter they are separately connected by a clutch coupling, the co-operating rolls on opposite shafts, forming a pair, being so proportioned relative to each other and the driving shafts, which latter are given a uniform motion, as to produce the desired differential peripheral velocity, substantially as and for the purpose set forth. 11th. The combination, with the hollow adjustable roll, its driving shaft, flexible coupling and clutch, and a relief mechanism, substantially as described, for operating the movable section of the clutch, of the movable bearing for the adjustable roll pivoted and sliding in an elongated bearing in the frame, and connected directly to the toothed disk of the relief mechanism, as and for the purpose set forth. 12th. In combination with the movable section of the clutch, and the reciprocating sleeve or section of the relief mechanism, substantially such as described, of the adjustable sleeve carrying the adjustable shipper, substantially as and for the purpose set forth. 13th. In combination with the driving shaft, hollow roll, flexible coupling and movable section of the clutch, a relief mechanism, substantially such as described, provided with a longitudinally and radially adjustable shipper for engaging the movable section of the clutch, substantially as and for the purpose set forth. 14th. In combination with the hollow roll, supported in movable bearings on the frame, and the driving shaft passing through said roll and connected thereto by a flexible coupling and clutch, of a relief mechanism, substantially such as described, consisting essentially of a shaft-supporting disks, provided with inclined teeth or cams on their proximate surfaces, one of said disks being connected to the movable bearing of the roll, and the other to a sleeve carrying a fork engaging the movable section of the clutch, and a spring for holding the two disks pressed together and the clutch section engaged, as set forth. 15th. In combination with the shaft of a relief mechanism, such as described, the link connected to said shafts and carrying a cam lever bearing against the frame, as and for the purpose set forth. 16th. In combination with shaft of the relief mechanism, the disk connected to the movable bearing of the roll and provided with inclined teeth or cams, a second disk or collar, provided with a series of inclined teeth or cams, co-operating with those of the first mentioned disk, a sleeve provided with a fork for engaging the movable section of a clutch, a cam lever pivoted in the end of a link passing through the frame and connected to the shaft, said cam lever serving both as a holding and operating device for the relief mechanism, substantially as described. 17th. In combination with the angle iron side pieces B of the frame, the movable bearings for the adjustable roll supported on the flange *b*, and provided with the web and cylindrical post working within the elongated slot in said flange of the shaft, of the relief mechanism, substantially as described, in bearings in the cross piece below the bearing for the adjustable roll, with the operating disk of the said relief mechanism located in proximity and connected directly to the web on the bearing, substantially as and for the purpose set forth. 18th. In a system, such as described, and in combination with the bolts C, C_2, constituting a pair or set, the two driving clutches for said rolls, a shaft supported in bearings and located above or below and between the bearings of the rolls, and provided with shippers engaging both clutches to disengage both rolls from their driving mechanism, substantially as described.

No. 28,030. Automatic Feed Board and Distributing Comb Feed Cylinders for Grist Mills. (*Engrenage de moulin à blé.*)

William Link, Crosswell, Mich., U. S., 18th November, 1887; 5 years.

Claim.—1st. A comb feed cylinder for grist or flouring mills, said cylinder being provided with blades b_1, having the teeth *b* arranged alternately in said cylinder, as and for the purposes herein specified. 2nd. In combination with a comb feed cylinder, the automatic feed board A with the spring *s*, and the set screw s_1 and lever L, substantially as herein specified.

No. 28,031. Waggon. (*Wagon.*)

James A. Whelpley, Keene, N. H., U. S., 18th November, 1887; 5 years.

Claim.—1st. The front wheel B, axle L mounted in bearings K, in combination with bolts 4, frame J, springs *j*, *j* and nuts *i*, *i*, substantially as and for the purposes set forth. 2nd. In combination with the ring H and frame J, the friction blocks I and caps or covers K, substantially as and for the purposes set forth. 3rd. The springs D, D and leaf spring E, in combination with the bent axle C, substantially as and for the purposes set forth. 4th. In combination with the bent axle C, the plates *b*, *b*, springs D, leaf spring E, braces F, and side frames G, substantially as shown and described. 5th. In combination with a bent axle, side springs capable of being secured at their upper ends to the tops of the axle, and at their lower ends provided with ears to receive the ends of a leaf spring, substantially as shown and described. 6th. In a three-wheeled vehicle, the front wheel, the axle of which is mounted in bearings held in position on the revolving frame by means of springs, so that the jar of the wheel will not be imparted to the vehicle, substantially as set forth. 7th. A tire provided with a concaved recess on its outer circumference, substantially as shown and described. 8th. A tire fastener consisting of a flat strip of thin-metal S, provided with a pin or stud, *s* substantially as shown and described. 9th. A tire provided with a concaved recess on its outer circumference, in combination with a tire fastener consisting of a flat strip of thin metal, provided at its centre with a pin or stud, substantially as set forth. 10th. The angle iron ring H, in combination with a three-wheeled vehicle, substantially as set forth. 11th. The combination of the angle iron ring H, side frames G, braces F, and rear axle C, substantially as and for the purposes set forth.

No. 28,032. Wire Lathing. (*Lattis en fil de fer*)

Charles A. Sackett, New York, N. Y., U. S., 18th November, 1887; 5 years.

Claim.—1st. As a new article of manufacture, a wire lathing consisting of a flat surface of wire meshes, stiffened by a series of thin flat flexible bands held in a position vertical to the plane of the lathing at ridges formed on such surfaces, substantially as described. 2nd. The process for forming wire lathing, which consists of first inserting flat flexible parallel strips of stiffening material in the meshes of wire fabric, in the direction of the length of such fabric during the process of formation, and second, crimping the fabric into ridges or corrugations, so as to hold such strips vertically to the plain surface of the fabric, substantially as described.

No. 28,033. Weigh Scales. (*Balances.*)

Arthur Taylor and William Stone, Toronto, Ont., 19th November, 1887; 5 years.

Claim—1st. In a beam scale, an adjustable weight suspended on an inclined plane formed in the balance beam, in combination with a stationary bar having notches formed in it to correspond with the indicating marks in the beam, substantially as and for the purpose specified. 2nd. An adjustable weight B, provided with a bail C having one or more rollers *a* journalled in it, and designed to rest upon an inclined plane formed in the beam A, in combination with the bar D having notches *d* formed in it to correspond with the indicating marks in the beam A, and designed to engage with the tongue *b* formed in the bail C, substantially as and for the purpose specified. 3rd. A balance-beam A, having a notch *d* formed in it near its pivot-point, in combination with a roller *a* journalled in the bail C of the adjusting weight B, substantially as and for the purpose specified. 4th. An adjusting weight B, provided with a bail C to rest upon an inclined plane formed in the balance-beam A, and a pointer F to indicate the indicating points on the beam A, in combination with a stationary bar D, notched to correspond with the indicating points in the beam A, and designed to engage with the tongue formed in the bail C, substantially in and for the purpose specified. 5th. A stationary bar E having raised marks formed on it to correspond with the indicating marks on the balance-beam A, in combination with the adjustable platen G, arranged substantially as and for the purpose specified. 6th. A platen G connected to the plate I by the double hinged plates J, and having pivots, *e* formed on it, in combination with the lugs *g* made in the plate I, which is adjustably supported by the bar E having raised marks formed its surface, substantially as and for the purpose specified.

No. 28,034. Tuyere. (*Tuyère.*)

Philippe Simon and Casper N. Braasch, Green Bay, Mich., U.S., 19th November, 1887; 5 years.

Claim.—1st. A tuyere having a concaved fire-bed, or recess W, deflectors F, F, above said fire-bed, and cross blast-issues G, G below said deflectors, said fire-bed having flaring end openings and narrowed at the top to about one-half of its greatest width by the projecting lips or deflectors F, F, substantially as shown and described. 2nd. In combination with a tuyere having cross blast-issues, the spring valves M, M located at the mouth of the blast-issue, the lever D and rod N, said valves arranged to diminish or increase the size of the blast-issue, substantialy as shown and described.

No. 28,035. Photographic Reproduction. (*Reproduction photographique.*)

The Universal Color Company, (assignee of Armand M. Jacobs), New York, N.Y., U.S., 19th November, 1887; 5 years.

Claim.—1st. The process of preparing a hard surface in suitable condition to be etched, or for use to yield an impression without being etched, which consists in coating the surface with a solution of a suitable resinate, strengthened by caoutchouc or the like, subjecting it in parts then to the action of light, and then to the action of an agent which will affect some part of the coating more than others, substantially as described. 2nd. The new process of etching, which consists in coating an appropriate surface with a suitable resinate, strengthened by caoutchouc, or the like, subjecting it then in parts to the action of light, then to the action of the agent which will affect some parts of the coating more than others, and then to action of the etching substance, substantially as described. 3rd. The new process of etching which consists in coating an appropriate surface with a suitable resinate strengthened by caoutchouc, or the like, subjecting it in parts to the action of light, and then directly to the action of an etching substance, substantially as described. 4th. A reproducing

surface, composed of a suitable resinate and caoutchouc, or the like, substantially as set forth.

No. 28,036. Pipe Wrench. (*Clé à tuyau.*)

Daniel R. Porter, Chelsea, and William C. Davidson, Boston, Mass., U.S., 19th November, 1887; 5 years.

Claim.—1st. In a pipe-wrench, the combination of a shank and fixed jaw, with a movable jaw provided with an extension that forms a spring, and adjustable upon the shank, substantially as and for the purposes set forth. 2nd. In a pipe-wrench, the shank A, fixed jaw B, saddle or slide D and set screw F, in combination with the adjustable jaws E, provided with an extension E1 that forms a spring and set-screw F, substantially as shown and described. 3rd. In a pipe-wrench, the shank A, fixed jaw B, saddle or slide D and set screw F, in combination with the adjustable jaw E, provided with a spring extension E1 and teat *e*, substantially as and for the purpose set forth.

No. 28,037. Churn. (*Baratte.*)

Francis A. Frank, New York, N. Y., U. S., 21st November, 1887; 5 years

Claim.—1st. The combination of corrugated vessel *a*, with the concave lid c and with uprights *d*, cross bar *e* and with the handle bar *g* to which the driving mechanism of the dasher is connected, substantially as specified. 2nd. The combination of corrugated vessel *a*, with the lid *c*, uprights *d*, cross bar *e*, handle bar *g*, and with the gear wheels *h*, *j*, spindle *k* and with the dasher shaft *l* having the arms *o* and blades *n*, substantially as specified. 3rd. The combination of vessel *a*, with the slotted lugs *z*, cross-shaped plate *p*, discharge pipe *x*, strainer *y*, and with dasher and driving mechanism, substantially as specified.

No. 28,038. Sewing Machine. (*Machine à coudre.*)

Thomas H. Martin, London, Eng., 21st December, 1887; 5 years.

Claim.—1st. The frame A, with its parts a^1, a^2, a^3, made so that it can be punched or stamped, and bent in one piece from sheet metal. 2nd. The needle arm E, with its parts e^1, e^2 and e^3 made so that it can be punched or stamped, and bent in one piece from sheet metal. 3rd. The combination of the needle-arm E, the rod *b* on which it can slide and turn, the arm e^3 and spring e^4 with the rotating cam f^1, these parts operating together for advancing the fabric, the length of a stitch at every stroke of the needle. 4th. The combination of the needle arm E and its pin e^4, with the link f^4 and crank f^2, these parts operating for effecting the up and down stroke of the needle.

No. 28,039. Gag Runner for Harness.

(*Bouton coulant pour harnais.*)

George L. Smith, Newark, N.J., U.S., 21st November, 1887; 5 years.

Claim.—1st. A gag-runner provided with a spirally curved tongue, as C, substantially as shown. 2nd. A gag-runner, provided with the laterally curved tongue or hook C, parallel with the upper end of the gag-runner. 3rd. The combination, with loop B, horizontal arm *a* secured to the top thereof, and the curved hook C secured to the top thereof, substantially as described, adapted to extend horizontally across the rear face of the strap.

No. 28,040. Buggy, Carriage and Cutter Pole. (*Timon de voiture.*)

John B. Armstrong, Guelph, Ont., 21st November, 1887; 5 years.

Claim.—As an improved article of manufacture, a vehicle pole in which the pivot eyet are formed on the ends of a curved metal crossbar A, connected to the wooden pole bar C by the downwardly-bent metal plate B, and stayed by the braces D, substantially as and for the purpose specified.

No. 28,041. Elliptic Spring Gear for Buggies or Carriages. (*Train de voiture à ressorts en ellipse.*)

John B. Armstrong, Guelph, Ont., 21st November, 1887: 5 years.

Claim.—1st. In an elliptic spring gear for buggies or carriages, the naked axles A and B, bearing block H and head-plate E carrying elliptic springs suitably attached thereto, and the wear plate G bolted to the head plate E and front axle, in combination with the converging tempered steel perches C and D, connected together by a thimble and bolt at *c*, and by a clamp or clip *e*, as shown and described.

No. 28,042. Side Spring Buggy Gear.

(*Train de voiture à ressorts de côté.*)

John B. Armstrong, Guelph, Ont., 21st November, 1887; 5 years.

Claim.—As a new article of manufacture, a buggy gear composed of side springs E, suspended at one end to the naked rear axle, and at their other end to the metal head-block F, secured to the naked front axle, the said axles being connected together by the bifurcated perch connected to the centre of the front axle, and to the rear axle outside of the springs E, substantially as and for the purpose specified.

No. 28,043. Method of and Apparatus for Manufacturing Gas. (*Mode et appareil de fabrication du gaz.*)

Thomas B. Stillman and Charles B. Harris, New York, N. Y., U. S., 22nd November, 1887; 5 years.

Claim.—1st. The process of producing a permanent, illuminating gas from liquid hydrocarbons, which consists in volatilizing the lighter hydrocarbon gases from the liquid hydrocarbon, then subjecting said gases when combined with steam to heat in the presence of heated or ignited carbonaceous material, and draining off the gases, thereby produced into a receiver and at same time by the application of a higher degree of heat, volatilizing the heavier hydrocarbon gases from the residum left from the above operation, subjecting such gases when mixed with steam to heat in the presence of heated or ignited carbonaceous material, and then drawing off the gas thus produced into a receiver. 2nd. In an apparatus for the manufacture of gas from oil, the combination of an exterior retort adapted to be mounted in a suitable furnace or fire-place, and having an exit for communication with a suitable gas receiver, and an interior stationary retort having an inlet for the introduction of oil, and also upper and lower exits which lead into the exterior retort, substantially as and for the purpose set forth. 3rd. In an apparatus for the manufacture of gas from oil, the combination, substantially as set forth, of an exterior retort adapted to be mounted in a suitable fire-place or furnace, and having an exit *c*, an interior retort having an upper exit *d* leading into the exterior retort, and of such size and so arranged with reference to the exterior retort that the space between the two retorts may be filled with coal or coke, for the purpose set forth and an injector communicating with the interior retort, for the purpose described. 4th. The combination, substantially as set forth, of the exterior retort adapted to be mounted in a suitable fire-place or furnace, its injector, the interior retort, its injector, and upper and lower exits *d*, *e*.

No. 28,044. Re-inforce for Spikes.

(*Renfort de clou barbelé.*)

Seth A. McLean, Bay City, Mich., U. S., 22nd November, 1887; 5 years.

Claim.—In a spike, a point formed or provided as specified with knife edges or cutters *i*, which extend obliquely upward at both sides of the point, and operate to cut the timber grain sheavingly, all substantially as hereinbefore set forth.

No. 28,045. Spike Point. (*Pointe de clou barbelé.*)

Seth O. McLean, Bay City, Mich., U. S., 22nd November, 1887; 10 years.

Claim.—1st. A re-enforce device for use in connection with railroad and other spikes, made comparatively thin and of a width considerably greater than that of the spike designed to be backed up by it, and pointed so as to properly drive into timber crosswise of the grain of the latter, substantially as and for the purposes set forth. 2nd. The combination, with a driven spike, of a re-enforce or back stay device, composed of a comparatively thin piece of metal, but much broader than the spike, and suitably sharpened to drive into the timber in which the spike may be driven, the combination being and operating substantially as hereinbefore set forth. 3rd. A spike re-enforce composed of a plate-like piece of metal broader than the spike, sharpened at its lower end and formed or provided at its upper end with a lateral projection or head, adapted to overlie the head of the spike, in connection with which said re-enforce may be used, substantially as and for the purpose set forth.

No. 28,046. Saw Swage. (*Etampe à scie.*)

Clarence Ward, Haring, Mich., U.S., 22nd November, 1887; 5 years.

Claim.—1st. A saw-swage consisting of the parallel plates A, A1, separated centrally by a gauge-washer *b*, pivotally connected at one end to an adjustable plate a^1, and provided at the other with serrated jaws C, eccentric-faced roller D and interchangeable stationary anvils D, together with a clamping screw F, and means for operating said roller D, and screw F, substantially as shown and described and for the purpose herein set forth. 2nd. In a saw-swage, the combination, with a frame, constructed as herein set forth, of the serrated jaws C, eccentric-faced roller D and interchangeable anvil E, held stationary within said frame by set-screws d^2, together with a clamping screw F, and means for operating said roller and screw, substantially as shown and described and for the purpose herein set forth. 3rd. In a saw-swage, the combination, with a frame, constructed as herein set forth, of the serrated jaws C, eccentric-faced roller D, and the stationary anvil E, provided with a circular bearing-surface, and an eccentric inner surface d^1 together with a right and left threaded screw F, and means for operating said roller D, and screw F, substantially as shown and described and for the purpose herein set forth. 4th. In a saw-swage, the combination, with the parallel-spaced plates A, A1, carrying clamping jaws, and means for swaging a tooth of the oppositely-threaded screw F, substantially as shown and described and for the purpose herein set forth. 5th. The combination, with two spaced bars, provided at one end with holding-jaws, and means for clamping the said jaws to a saw tooth, of an anvil adjustably held in said bars and an eccentric roller journalled in said bars above the anvil, substantially as shown and described.

No. 28,047. Head Rest. (*Appui-tête.*)

John W. Campbell, Toronto, Ont., 22nd November, 1887; 5 years.

Claim.—1st. A head-rest A, having an upright B attached to it, in combination with a shoulder-strap C and D, arm-straps E, the latter being provided with loops F, arranged substantially as and for the purpose specified. 2nd. A head-rest A, provided with an upright B, in combination with the shoulder-straps C, body-strap G and arm-straps E, the latter being provided with loops F, arranged substantially as and for the purpose specified. 3rd. A head-rest having an upright designed to extend down and fit against the back of the wearer, in combination with metal straps attached to the head-rest and extending over the shoulders of the wearer, substantially as and for the purpose specified.

No. 28,048. Vehicle Spring and Coupling.

(*Ressort et accouplement de voiture.*)

Joseph McDougall, Arnprior, 22nd November, 1887; 5 years.

Claim.—1st. The combination of spring A, coupler K, clips B and

axle L, substantially as described and shown. 2nd. The combination of springs A_1, A_1, double coupling *k* having socket G, steel pin H, clips B and axle L, substantially as described and shown.

No. 28,049. Method of Cutting and Joining Racoon Tails. (*Manière de tailler et assembler les queues des peaux de ratons.*)

John Keller, Toronto, Ont., 22nd November, 1887; 5 years.

Claim.—1st. The art or method of cutting and joining racoon tails, which consists in first dividing the tail crosswise into sections A, B, C and *c*, then cutting these vertically into sections *a*, *a*, *b*,*b*, *c*, *c*, etc., and joining a number of the latter so as to form a skin having an even thickness of fur throughout, substantially as and for the purpose described. 2nd. As a new article of manufacture, a bear-like article formed from number of racoon tails, the same having been first divided into sections according to thickness of fur, and these sections joined together so as to leave the greatest thickness of fur in the centre and the least at the ends after the manner of a single tail, substantially as and for the purpose specified.

No. 28,050. Sash Fastener. (*Arrête-croisée.*)

Frank L. Rosentreter, Cleveland, Ohio, U. S., 22nd November, 1887; 5 years.

Claim.—1st. The combination, a meeting-rail lock of a keeper on one of the meeting-rails, a lock-case on the opposite rail provided with bolt-guides, a bolt having a bifurcated shank, an upturned tapered locking-lip, an arc-shaped groove and two shoulders formed on one of the limbs of the bolt shank, and a circularly movable base-plate having a central post extending through the lock-case, an inclined concentric flange adapted to lift the front end of the bolt, and a stud for protruding and retracting the latter, substantially as described. 2nd. The combination, with the lock-case and circularly movable base-plate constructed as described, of a bolt constructed with an upturned tapered lip shoulder, and an arc-shaped groove whereby the bolt while being shot will be raised and caused to engage with a keeper-bar, substantially as described. 3rd. The combination, with the lock-case provided with guides for a bolt, of a bolt having an upturned lip and two shoulders on one of its limbs, a circularly movable base having a bolt throwing and retracting stud, and also an inclined bolt-lifting flange, and a handle secured on the post of this base having a stop adapted to abut against the sides of the lock-case, substantially as described.

No. 28,051. Spike. (*Clou barbelé.*)

Artemus Welsh, Peter L. Loucks and Joseph R. Stauffer, Scottdale, Penn., U.S., 22nd November, 1887; 5 years.

Claiml.—1st. As a new article of manufacture, a railroad-spike having an enlarged oval-shaped head formed integral with the body or shank of the spike, and provided with the flat driving face *a* on its upper surface in line with the vertical axis of the body, the said head having the rear curved portion a_4 below which is a projection F formed integral with the shank and gradually merging into the same, the projecting shoulders D formed by the curved side portions a_3, and the front inclined portion a_2 of the head projecting beyond the sides of the shank, and the integral enlargement C on the front face of the spike having the inclined lower face *e* terminating at its upper end on a line beneath the plane of the shoulders, substantially as specified.

No. 28,052. Pulp Engine.

(*Machine à pâte à papier.*)

Wallace W. D. Jeffers, Ticonderoga, N. Y., U. S., 22nd November, 1887; 5 years.

Claim.—1st. The combination, with the shaft carrying the conical grinder of its annularly grooved end, the movable box and bushing, the ways on the extension secured to the head, the leading screw and worm screw, and the operating worm whereby the screw may be advanced or retracted, substantially as specified 2nd. The combination, with the central shaft having successively different diameters of the grinder sections having varying diameters for the reception of the hubs of the sections of said grinding cone, substantially as specified. 3rd. The combination, with the conoidal shell, of the sections adapted to fit therein in annular seats, provided for the purpose, the said sections being provided with flanges to rest in said seats and with guiding teeth or ribs, substantially as specified.

No. 28,053. Medicinal Compound for the Cure of Rheumatism and Rheumatic Diseases. (*Composition medécinale pour la guérison des affections rheumatismales.*)

Eliza J. Simpson, Leamington, Ont., 22nd November, 1887; 5 years.

Claim.—1st. The medicinal compound consisting essentially of senna (solidextract) rhubarb (turkish), aloes ginger *a a*, nitrate of potash and resin compounded and combined, substantially in the manner and proportions hereinbefore stated.

No. 28,054. Double Furrow Plough.

(*Charrue à deux sillons.*)

Malcolm Wilson, London, Ont., 22nd November, 1887; 5 years.

Claim.—1st. In a double furrow plough, a straight jointed frame A, pivot bar B, and plough standards G, G, in combination with a lever L, and means for holding said lever at the position to which it is adjusted, substantially as and for the purpose set forth. 2nd. In a double furrow plough, the straight jointed frame A, and plough standards G, G, in combination with the lever P, gauge-wheel R and cog segment S, and dog T or their substantial equivalent, substantially as and for the purpose set forth. 3rd. In a double furrow plough, the straight jointed frame A, and plough standards G, G, in combination with the axle C, arms C_1 C_2, ratchet E, dog F, and wheel D, substantially as and for the purpose set forth. 4th. In a double furrow plough, the straight jointed frame A, and plough standards G,G, in combination with the anti-friction roller J, substantially as and for the purpose hereinbefore set forth. 5th. The straight jointed frame A, pivot bar B, plough standards G, G and anti-friction roller J, in combination with the levers P, L, and ratchet E or their substantial equivalents, and means for holding them at the position to which they are adjusted, axle C, arms C_1, C_2, and wheels D, substantially as and for the purposes set forth.

No. 28,055. Spike. (*Chevillette.*)

James T. Multy, Philadelphia, Penn., U.S., 22nd November, 1887; 5 years.

Claim.—A railway spike, formed of a rolled bar sharpened at one end, and slightly bent near its middle to enable it when driven to catch over the edge of the base of the rail, and extending thence upward to such distance as that when bent sidewise will form a brace or support to the head of the rail, substantially as described and shown.

No. 28,056. Combined Pocket Case.

(*Nécessaire de poche.*)

Isaac G. Raffel, Baltimore, Md., U.S., 23rd November, 1887; 5 years.

Claim.—1st. A pocket-case composed of two sheet-metal sides *b*,b_1, which are secured together, one of said sides having a longitudinal slot c_1, and the case containing a match compartment *h*, a mirror pocket *c*, a mirror *d* occupying the pocket and provided with a pin d_1 which projects through the said slot in the case-side, and an end-cover E closing the match compartment and also confining the mirror. 2nd. A pocket-case A, comprising a mirror pocket *c* and mirror, a match compartment *h*, an end-cover E closing the mirror-pocket and match compartment, and a stamp compartment closed by a lid J.

No. 28,057. Saw Sharpening Machine.

(*Machine à affuter les scies.*)

Ammi Blackmer, Minneapolis, Minn., U.S., 23rd November, 1887; 5 years.

Claim.—1st. The combination, in a saw-sharpening machine, of a vertically movable grinding-wheel, a movable plate arranged to turn about a vertical axis, that is substantially under the centre of the working part of said wheel and saw-supporting devices secured to said plate, substantially as described. 2nd. The combination, in a saw-sharpening machine, of a grinding-wheel mounted in vertically-movable bearings, a movable plate arranged to turn about a vertical axis, that is substantially under the centre of the working part of said wheel, horizontally movable slides supported on said plate, and a vertically-adjustable saw-supporting device supported on said slides, substantially as described. 3rd. The combination, with the grinding-wheel, of the plate 45 arranged to turn about an axis that is substantially central to said wheel, the horizontally-movable slide 61 supported on said plate, the plate 63 secured to said slide, and having the vertical slot therein, and the vertically movable stud or bolt 67 adapted to support a saw, all substantially as described. 4th. The combination, in a saw-sharpening machine, of the pivoted standard 3, the frame 7 pivoted to said standard, a grinding-wheel mounted on said frame, and a stationary vertical way or guide with which said frame is connected, whereby said wheel is guided in a vertical direction, substantially as described. 5th. The combination, with the swinging frame 7 and the grinding-wheel mounted thereon, of the shaft 25 supported in bearings on the frame of the machine, the lever 33 secured to said shaft, the yoke 27 connecting said lever with said swinging frame, the arm 31 and the counterbalance weight 33, substantially as described. 6th. The combination, in a saw-sharpening machine, with the frame 2, and standards 21, of the swinging frame 7, the grinding-wheel mounted thereon, the vertical way 41 supported by the standard 21, the block 43 secured to the shaft of the grinding-wheel, and moving in said way, and the counterbalanced lever 23 pivoted to the standard 21 and connected with the frame 7 by a yoke 27, substantially as described.

No. 28,058. Tea Kettle Cover.

(*Couvercle de théière.*)

Judson D. Perry, Detroit, Mich., U.S., 23rd November, 1887; 5 years.

Claim.—1st. As a new article of manufacture, a cover for kettles or other vessels, consisting of a cup provided with an inclined bottom and a gravity valve for closing the discharge opening of said cup, substantially as described. fnd. A cover for tea kettles and other vessels, consisting of a cup A provided with an inclined bottom, and annular flange in combination with a gravity valve *d* in the discharge *b* of said cup, substantially as and for the purposes set forth.

No. 28,059. Double Acting Pressure Pump.

(*Pompe foulante à double effet.*)

Thomas D. Harrison, Hamilton, Ont., 23rd November, 1887; 5 years.

Claim.—1st. The combination of a cylinder A, having open ends and a discharge pipe D and D_1 attached to its centre, the rigid rings A_1, A_1, the disc A_2 and the bucket B, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of a pump bucket B, composed of leather disc B_1, leather rings B_3 and B_5, metal ring B_4 and the metal gratings B_2 and B_6, substantially as and for the purposes hereinbefore set forth

No. 28,060. Grain Saving Device for Harvesters and Grain Binders.

(*Glaneuse pour moissonneuses-lieuses.*)

Henry F. Crandall and The Milwaukee Harvester Company, Milwaukee, Wis., U.S., 23rd November, 1887; 5 years.

Claim.—1st. In a grain binder, the combination, with its frame, of an inclined desk and a rearwardly extended receptacle arranged beneath the lower edge of said deck to receive the loose grain that falls therefrom. 2nd. In a grain binder, the combination on with a grain receptacle, of a deck having grooves or channels adapted for catching threaded grain and guiding it into said receptacle, as set forth. 3rd. In a grain binder, the combination, with a grain receptacle, of an inclined deck having grooves or channels for catching and guiding the grain into the receptacle, and fingers that extend beyond the lower edge of the deck, as set forth.

No. 28,061. Valve. (*Soupape.*)

William Hewitt and Thomas C. Hewitt, London, Ont., 23rd November, 1887; 5 years.

Claim.—1st. The combination of the valve V and guide G having lugs L, and means for securing them together, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the valve V and guide G having lugs L, and means for securing them together, and seat S, substantially as and for the purpose hereinbefore set forth. 3rd. The combination of the valve V, packing P, guide G having lugs L, and means for securing them together, and seat S, substantially as and for the purpose set forth.

No. 28,062. Combined Valve and Coupling.

(*Soupape et accouplement combinés.*)

William Hewitt ond Thomas C. Hewitt, London, Ont., 23rd November, 1887; 5 years.

Claim.—1st. The valve D and guide E having lugs H, and means for securing them together, and seat C, in combination with the tube A A_1 and coupling B B_1, substantially as and for the purpose hereinbefore set forth. 2nd. The valve D, packing G and guide E, having lugs H, and means for securing them together and seat C, in combination with the tube A A_1 and coupling B B_1, substantially as and for the purpose hereinbefore set forth.

No. 28,063. Wind Mill. (*Moulin à vent.*)

James W. Vanmeter, Oakville, Texas, U.S., 23rd November, 1887; 5 years.

Claim.—1st. In a wind-mill, the combination of the wind-wheel, the turn-table on which the wheel is mounted, the vane to direct the wind-wheel, the lever geared to the vane to turn the same, and the radially movable governor balls attached to the wind-wheel and connected to the lever, for the purpose set forth substantially as described. 2nd. In a wind-mill, the combination of the turn-table having the horizontal arm, the shaft journalled in the said arm, the wind-wheel attached to the said shaft, the sliding collar on the horizontal arm and having the endwise movable arm or rod F_1 guided in brackets G, the strap arranged on the collar, the radially movable governor balls attached to the wheel, the ball-crank levers connecting the said governor-balls to the strap, the vane to direct the wind-wheel, the weighted lever geared to the vane, for the purpose set forth, and means, substantially as described, connecting the said lever to the arm of the sliding collar, substantially as described. 3rd. In a wind-mill, the combination of the tower or support, the vertical tube K journalled therein, the casting secured to the said tube and having the horizontal arm, the main shaft journalled in the said arm, the wind-wheel attached to the outer end of the shaft, the radially movable governor balls attached to the wheels, the crank-wheel attached to the inner end of the shaft, the frame O_1 pivoted on the tube K and having the arm S_1, to engage the casting, the frame V_2, having caps W_1 fitting on the upper end of the tube, the pulley journalled therein, the weighted lever pivoted to the cap W_1 and geared to the frame O_1, and the chain or cord attached to the weighted lever passed over the pulley and extending down through the tube, the said lever being further connnected, for the purpose set forth substantially as described. 3th. In a wind-mill, the combination of the wind-whell, turn-table on which the wheel is mounted, the vane to direct the wheel, the lever C_2, geared to the vane to turn the same, the radially movable governor balls attached to the wheel and connected to the lever, and the adjustable weight on the said lever, for the purpose set forth substantially as described.

No. 28,064. Brake Block Attachment.

(*Disposition aux sabots des freins.*)

Wiiliam F. Milliken, Cheney, W. T., U. S., 23rd November, 1887; 5 years.

Claim.—1st. In combination with the brake-block, the plates B,B, secured on opposite sides of the said block, projecting beyond the face of the block and having grooves *b* in the opposing sides thereof, and the wear plate having the tongues or flanges on the sides thereof to fit into the grooves *b*, to hold the wear plate in position, substantially as specified. 2nd. In combination with the brake-block, the grooved plates B, B, arranged slightly closer together at the lower edges, and the tapered wear block C having flanges on the side edges, to fit in the grooves in the plates B, substantially as specified.

No. 28,065. Horse Collar. (*Collier de cheval.*)

Isaac Bergman, Baltimore, Md., U.S., 23rd November, 1887; 5 years.

Claim.—A horse-collar having a two-ply inner pad facing with a space between the said plies, and one of said plies consisting of a skin having wool adhering naturally to it, the adhering wool occupying the said space between the two plies, as and for the purpose set forth.

No. 28,066. Safety Lamp. (*Lampe de sûreté.*)

John Davidson and John Taylor, Guelph, Ont., 23rd November, 1887; 5 years.

Claim.—1st. A safety lamp having its oil vessel surrounded by a larger vessel for holding or containing a non-combustible fluid extending up around the wick tube of the oil vessel and being open at its top end, substantially as shown and described. 2nd. In a safety lamp, the combination of the oil vessel A, with its filling tube *c* and cap *d*, and the wick tube G with the outer and surrounding vessel B, provided with a top opening and cap *e*, and extending upward around the wick tube and open at its top end, substantially as described.

No. 28,067. Process and Apparatus for Manufacturing Sensitive Photographic Films. (*Procédé et appareil de fabrication des toiles photographiques sensibilisées.*)

George Eastman and William H. Walker, Rochester, N. Y., U. S., 24th November, 1887; 15 years.

Claim.—1st. The herein-described process of coating a continuous web of fabric with a uniform layer of sensitive gelatino-argentic emulsion, consisting in applying the emulsion to one side of the web, as it is passed through the coating device, in artificially cooling the coated web, in keeping the coated web in continuous motion and the coated surface removed from contact with obstructing devices until it has set, and finally, in delivering the web to a suitable rack or frame to dry, substantially as described. 2nd. The herein-described process of coating a continuous web of fabric with a uniform layer of sensitive gelatino-argentic emulsion, consisting in applying the emulsion to the lower side of the web, as it is passed through the coating devices, in carrying the coated web on suitable supports around the coating apparatus, and keeping it continuously in motion and the coated surface unobstructed, until the gelatine has set or stiffened sufficiently to prevent flowing, and in subsequently delivering the coated web to a suitable drying frame or rack, substantially as and for the purpose set forth. 3rd. The herein-described method of producing uniform coatings, upon continuous webs or strips of fabric, which consists in applying the coating material in a fluid condition evenly upon the face of the web, and in changing the flow of the coating upon the web to regulate and maintain its uniformity, and maintaining the web in motion and its coated surface unobstructed by contact with foreign bodies, until the coating has set or hardened sufficiently to prevent running, substantially as described. 4th. The herein-described improvement in the art of producing photographic paper, which consists in applying to one face of a web of paper a thin uniform coating or surface of fluid gelatino-argentic emulsion, by causing the paper to emerge from the level surface of a body of emulsion, and subsequently maintaining the coated web flat and in motion continuously and uniformly in the same direction, and the surface of the coating undisturbed by contact with foreign substances, until the gelatine has set or stiffened sufficiently to prevent running, substantially as and for the purposes set forth. 5th. The herein described process of producing gelatino-argentic fabric for photographic reproductions, consisting in applying to a moving continuous web of fabric, a uniform layer of sensitive gelatino-argentic emulsion, keeping said web in motion and the coated side unobstructed, until the coated gelatine is set or stiffened sufficiently to prevent flowing, and finally drying said coating. 6th. The herein-described method of producing uniform coatings upon continuous webs or strips of fabric, which consists in applying the coating material in a fluid condition evenly upon the face of the web, and subsequently maintaining the web in motion and its coated surface unobstructed by contact with foreign bodies, until the coating has set or hardened sufficiently to prevent running, substantially as described. 7th. The herein-described continuous process of producing gelatino-argentic fabric for photographic reproductions, consisting in applying in a suitable non-actinic light to a running continuous web of fabric, a uniform layer of sensitive argentic fluid emulsion, keeping said web in motion and the coated side unobstructed, until the coated gelatine is set or stiffened sufficiently to prevent flowing, and finally, while the web is in motion and the coating being applied, depositing that part of the web on which the coating has set or stiffened at rest with relation to its supports to dry. 8th. The combination, in a machine for coating a continuous web of paper with sensitized emulsion, of the trough, the immersion roller projected within the trough with its upper face above the level of the liquid, so that one face only of the paper will be brought in contact with the liquid when drawn around said roller, a series of smooth faced rolls disposed at intervals around the trough, a hang-up or drying frame and driving mechanism applied to the last, and one or more of the intermediate rollers, substantially as described, whereby the web of paper is drawn through the emulsion and held pressed against the surface of the immersion roller, by the frictional contact of its uncoated face, with the smooth surface of the driven roller. 9th. In an organized machine, for automatically coating a continuous web of paper with sensitized emulsion, the combination of the following instrumentalities: supports for the roll of paper, a trough for containing the sensitized emulsion in a fluid condition, a roller with its lower surface immersed in the trough and around which the paper is conducted to bring one face only in contact with the emulsion, a series of smooth faced rolls for sustaining the coated web and holding it under tension while the coating is setting, said rollers arranged to make contact with the uncoated surface of the web and to conduct the latter around the supply roll and coating devices, driving mechanism for rotating one or more of the series of smooth supporting rollers to affect the feeding of the web, and a hang-up or drying apparatus upon which the coated paper is delivered and held suspended, substantially as and for the purposes set forth. 10th. In an organized machine for making sensitive gelatino-argentic paper for photographic use, the combination of one or more driven smooth faced rolls for maintaining the coated paper in motion, a suitable hang-up machine and a coating mechanism consisting of a smooth faced roll partially submerged in the coating material, said coating roll being arranged at such distance from the hang-up machine as to allow the gelatinous coating to set

before it reaches the looping slat, substantially as described. 11th. In a machine for coating paper with sensitized gelatinous emulsion, the combination, with the trough, and means for heating the emulsion contained therein, of a roller partially immersed in the liquid emulsion around which the paper is drawn, so that one face only will be brought into contact with the emulsion and receive a coating thereof, suitable paper feeding rolls and a delivery roller arranged at such a distance from the trough that the paper is kept continuously in motion, until the film has set before delivery to the hang-up frame, as set forth.

No. 28 068. Cuff Holder. (*Agrafe-poignet.*)

Charles A. Howell, Adrian, Mich., U. S., 24th November, 1887; 5 years.

Claim.—A cuff-holder, consisting of the spring metal piece 1, 2 and 3, bent at an angle, as shown at 7, and the pin 4 riveted to part 2, having its point turned down and lying closely in the indentation sunk in the upper part of 3, substantially as shown and described.

No. 28,069. Fertilizer Distributer.

(*Distributeur d'engrais.*)

Samuel H. Everett and George W. Kirkpatrick, Macedon, N. Y., U. S., 24th November, 1887; 5 years.

Claim.—1st. The combination, in a fertilizer distributer, of a box or hopper, a bottom therefor provided with a discharge opening or outlet, a gear wheel below the bottom, having an open centre and provided with an arm extending upward through the discharge opening, and a cap or shell mounted upon and carried by said arm, said cap being adapted to cover the outlet and provided with one or more openings through its side for the passage of the material to the outlet opening. 2nd. A fertilizer distributer, consisting of a plate having a discharge opening or outlet, an annular gear wheel beneath said plate and encircling the outlet, and an arm carried by said wheel and extending up through the outlet opening, and a cap or shell carried by said arm and serving both to cover the opening and to direct the material thereto. 3rd. The combination, with a hopper bottom, having a discharge opening or outlet, of an annular gear wheel below said bottom, encircling the outlet, and provided with arms extending upward through the discharge opening, and a feeding or discharge device carried by said arm, the outlet opening being free from obstruction of any kind. 4th. In combination with a bed plate or bottom A, having a central delivery opening, a horizontally rotating distributer plate overlying the same, and provided with two eccentric lips *l* adapted to deliver the material thereunder, through the central opening from opposite sides. 5th. The plate, having the central depression and delivery opening, in combination with the rotary plate D, overlying said opening and provided with the two flanges *l*, and the wiper E, having its two ends extended beyond the path of the plate D, to deliver the material inward in advance of the respective lips. 6th. The rotary feed plate D, adapted to deliver the material beneath itself, in combination with plate A, having the central opening and the elevated flange around the same to sustain the feed plate. 7th. The plate A, with a central discharge opening, in combination with an overlying rotary plate D, the underlying wheel with the central opening and the arched post to carry the plate D, and the bracket C to sustain the wheel. 8th. The horizontal wheel having a tubular hub forming a delivery opening for the material, in combination with a rotary feed plate adapted to deliver the material laterally into the upper end of said opening and in opposing sleeves, whereby the tendency of the material to lodge within the opening is prevented. 9th. The plate A, provided with the delivery opening, in combination with the feed plate or distributer D, the underlying toothed wheel having a central opening, and the driving pinion meshing directly with the wheel, the said pinion and its shaft being arranged out of line with the opening, whereby an unobstructed delivery of the material is permitted.

No. 28,070. Duplex Steam Valve.

(*Soupape double à vapeur.*)

Simeon Mills, Jesse Walrath and Charles H. Lee, Madison, Wis., U.S., 24th November, 1887; 5 years.

Claim.—1st. A duplex steam-valve, consisting of a double-faced convex valve seat A, the adjustable concave valve B, B,, and rock-shafts C, C, constructed and arranged to operate as herein shown and described. 2nd. In combination with the valve seat A and the valves B, B, the rock shafts C, C, having their ends provided with slots *e*, *e*, and set screws *f*, *f*, for adjusting the valves to the valve seat, as set forth.

No. 28,071. Device for Agitating the Screens of Fanning Mills. (*Appareil pour agiter les grillages des tarares.*)

Anthony Kline, Harriston, Ont., 24th November, 1887; 5 years.

Claim.—1st. A device for causing a vibratory or trembling motion to be given to a screen of a fanning mill, consisting of rollers journalled on side supports fastened to the main frame, under each of the corners of the screen frame, and corrugations formed under the frame of the screen or shoe, which carries the screen, the corrugations being designed to rest on the said rollers, and to slide over them lengthwise of the mill, af the screen is given a reciprocating motion, substantially as specified. 2nd. The combination, with the rollers E, journalled in side supports F, attached to main frame, of corrugated pieces D, formed near the corners of shoe B and designed to rest on, and move over the rollers E, when the shoe is caused to reciprocate, so as to give a vibratory or trembling motion to screen C resting on said shoe, substantially as specified. 3rd. The combination, with screen C, adapted to receive a reciprocating motion, of corrugated pieces D, formed thereon and designed to rest on and move over rollers E journalled on side supports F, substantially as described and for the purpose specified.

No. 28,072. Sewing Machine. (*Machine à coudre.*)

Arthur F. Wileman, Ealing, Eng., 25th November, 1887; 5 years.

Claim.—1st. A sewing machine, constructed of a base A, uprights B, B_1, C, C_1, arm D and head E_1, formed in separate parts united by rivetting together, as shown and described. 2nd. In a sewing machine frame, the uprights B, B_1, C, C_1, each constructed of a flanged plate of sheet metal, and a central vertical half round rib rivetted to the plate by the bushes in which the shafts revolve, substantially as specified. 3rd. In a sewing machine frame, the arm D of sheet metal, of inverted U-section, rivetted at the ends to the upright B_1 and to the needle bar box E, substantially as specified. 4th. In a sewing machine frame, the arm D, of inverted U-section, with upwardly directed spring arms formed in one piece of sheet metal bent up, as and for the purpose specified. 5th. In a sewing machine, the head E, constructed in the form of a box made in two parts E, E^1, both being plates of sheet metal bent up at right angles, the part E at top and bottom to form the top and bottom of the box head, and the part E_1 at the sides to enclose the sides of the box, and the two parts being united by the sides of the part E^1, embracing and sliding upon the edges of the part E, substantially as specified. 6th. In a sewing machine, in which the head E is made of sheet metal, the guiding or bearing surfaces e_4, for the presser-foot bar, and a guide c_3 for the needle-bar, formed by partially severed and inwardly bent portions integral with the ends of the box E, substantially as specified. 7th. In a sewing machine, the guide for the needle bar constructed of a sheet metal strip *e*, of U-section, partly embracing the needle-bar and secured by being notched and halved into, or interlocked with the correspondingly notched edges of the top and bottom ends of a box or head E, constructed of two parts E, E^1, in the manner described. 8th. In a sewing machine, the shuttle race and feed mechanism support B_1, formed of a plate of sheet metal creased or stamped up along curved arcs Z, of different radii, to form the upper boundary of the shuttle race and prevent the shuttle jumping out of the shuttle carrier, as specified. 9th. In a sewing machine, the flanged plate C_1, having the flanges partly split off at the upper ends to form clips c_3, embracing and holding the edges of the worktable F as specified. 10th. In a sewing machine, the inverted L-shaped lever R, made in one piece of sheet metal, of the form shown, bent up at right angles to form the claw and the lugs *n*, *o*, and having a combined oscillating and sliding motion on its lower extremity, as specified. 11th. In a sewing machine, the feed claw lever R mounted at the back of the shuttle race, between the plate C_1 and a strap r_1, and provided with lugs *n*, *o*, projecting through holes in the plate C_1, in combination with cams N, O, at the other side of the said plate C_1, substantially as specified. 12th. In a sewing machine, the double feed actuating cam N, O, made of two separate discs juxtaposed and rivetted together, as described. 13th. In a sewing machine, the take-up arm L, of the form shown, pivoted in the box E and actuated in the downward direction by a stud k_1, on the needle-bar, and in the upward direction partly by a spring l_1 and partly by the needle-driving crank *h*, as specified. 14th. In a sewing machine, the spindle of the driving wheel handle, carried by a plate hinged on a cross-pin g_4, in a longitudinally slotted cylindrical stem g_3, fitted to rotate in a socket in the driving wheel rim, in combination with a slot g_6, in the inner side of the latter, and a means of turning the stem g_3, so that its slot will coincide or not with the slot in the wheel rim, according as the handle spindle is to be folded inwards or locked rigidly to the wheel, as described. 15th. A sewing machine shuttle, having an inwardly turned piece *t*, cut out from, and integral with the shell of the shuttle, to form a spring bearing for the shuttle spool, and leave a notch in the nose end of the shell to receive the horn of the shuttle carrier, as specified. 16th. A sewing machine shuttle, having the bar t_1 formed integrally with the shell of the shuttle, by cutting parallel longitudinal slots and pressing the intervening strip or bar inwards, as specified. 17th. A sewing machine shuttle, having a tension device consisting of a spring *n*, fixed within and pressing against the upper side of the shuttle and terminating in a hook, in combination with a hole t_3 in the upper side of the shuttle, covered by the spring, and with an oblique slot t_2 leading rearwards from the hole into a longitudinal slot not covered by the spring, substantially as specified.

No. 28,073. Vehicle Wheel. (*Roue de voiture.*)

James McCallum, Elgin, Ill., U.S., 25th November, 1887; 5 years.

Claim.—1st. A cast metal vehicle-wheel, consisting essentially of a chilled hub, provided with spokes integral with, and radiating tangentially from said hub to the rim of the vehicle, substantially as set forth. 2nd. In a vehicle-wheel, the combination, with the rim and chilled hub, of two oppositely radiating sets of tangent spokes integral with the hub, and extending from the said hub to the rim, and intersecting and attached to each other, substantially as set forth. 3rd. In a vehicle-wheel, the combination, with the rim and hub, of two oppositely radiating sets of flat or hollow right-angle T-shaped spokes, formed integral with the said parts and radiating tangentially from the hub to the rim, substantially as set forth. 4th In a cast metal vehicle-wheel, the combination, with the rim and hub, of a series of hollow flat right angle or T-shaped spokes integral with the hub, for the purpose, substantially as set forth. 5th. In a cast metal vehicle-wheel, the combination, with a hub and spokes integral therewith and radiating tangentially therefrom, of a wrought-iron tire shrunk on, for the purpose substantially as set forth.

No. 28,074. Burglar Alarm.

(*Avertisseur d'effraction.*)

Benjamin F. Hough, Sandusky, Ohio, U. S., 25th November, 1887: 5 years.

Claim.—The combination, in a burglar alarm or property-protecting machine, of the reel H, the crank M, the arbor N and the eccentric O attached and used in connection with movable pin I, the base of the machine with pin-receiving holes P and Q, the detent lever D, the pin I, the contact spring C and the plates A and B, for the various purposes specified, substantially as shown above.

No. 28,075. Dental Engine. (*Engin dentaire.*)

William A. Knowles, Alameda, Cal., U. S., 25th November, 1887; 5 years.

Claim.—1st. In combination with crane-arm A, the crane-arm extension B, by means of the stationary set-screw X, button T, shank T1 and slot W, for the purpose of extending and contracting the range of operation of the dental engine, constructed and operated substantially as and for the purposes set forth. 2nd. In combination with the crane-arm of a dental engine, the gear G, H, I and K, by means of the sleeve P, slot P, spindle J and J1, pin U, screw S, thumb-piece V, cone bearings R and R1, and the bracket N, jaws M, set screw O, the sleeve-bearing Z, the head-block L for the purpose of reversing the gear and adjusting the same, constructed and operated substantially as and for the purposes set forth. 3rd. In combination with the head-block L, the jaws M, set screw O, sleeve-bearing Z and bracket N, for the purpose of adjusting the pinion K at any required point, constructed and operated substantially as and for the purposes set forth.

No. 28,076. Medicated Cigar and Cigarette.

(*Cigare et cigarette hygiéniques.*)

John M. Allan, Lakewood, N.J., U.S., 25th November, 1887; 5 years.

Claim.—1st. A cigar or cigarette, having a filler of needles of pine or other coniferous, resinous and tarry trees, and a wrapper of tobacco, substantially as described. 2nd. A cigar or cigarette, containing the needles of pine, or other coniferous, resinous and tarry trees, substantially as described.

No. 28,077. Tension Releasing Device for Sewing Machines. (*Appareil à détendre pour machine à coudre.*)

William H. Taylor, Caribou, Charles D. Cutts and Eben E. Scates, Fort Fairfield, Me., U.S., 25th November, 1887; 5 years.

Claim.—1st. The combination of the tension plate *f*, the plate *e* having ears *h*, *h*, and the lifting device pivoted to said ears, and provided with the concave cross piece 3, whereby a thread passage is formed when the lifter is raised to engage it with the tension plate, as set forth. 2nd. The combination of the plate *e*, having the ears *h*, *h*, and screw-receiving hole *k*, the lifter connected by rivets to the ears *h*, *h*, the tension plate *f*, the adjusting screw *g* and the supports *b*, *c*, *d*, for said plates and adjusting screw, as set forth. 3rd. As an article of manufacture, the plate *e*, having screw-receiving hole *k*, the ears *h*, *h* and the tension plate-lifter composed of the side pieces 2 2 rivetted to said ears, and the concave cross-piece 3, as set forth. 4th. The combination, with the tension plate *f*, adjusting screw and supports *b*, *c*, *d*, of the plate *e* having the ears *h*, *h* and screw hole *k*, and the lifter composed of the side piece 2, 2 pivoted to said ears, the lever 4 and the concave cross-piece 3, as set forth.

No. 28,078. Skeleton Road or Breaking Cart. (*Désobligeante.*)

Benjamin J. Nash, London, Ont., 25th November, 1887; 5 years.

Claim.—A road cart, formed with a receptacle N, substantially as set forth.

No. 28,079. Open Stopper for inhalers, etc.

(*Bouchon foré pour inhalateurs, etc.*)

Henry D. Cushman, Three Rivers, Mich., U. S., 25th November, 1887; 5 years.

Claim.—1st. As a new article of manufacture, an open or perforated cup-shaped stopper slitted, scalloped or notched around its margin, so as to be capable of pressing outward within a tube to hold it in place, substantially as set forth.

No. 28,080. Applying Celluloid to Organ Key Boards, etc. (*Application de la cellulose aux claviers des orgues, etc.*)

William C. Zeidler, Toronto, Ont., 26th November, 1887; 5 years.

Claim.—1st. As an improvement in the art of applying sheets of celluloid to wood, the herein described process, consisting of applying to one side of the celluloid an adhesive, containing alcohol or some equivalent latent solvent of celluloid, then placing said side in contact with the wood, then placing the whole under pressure, then subjecting it while under pressure to heat, then restoring it to normal temperature, substantially as shown and described. 2nd. As an improvement in the art of applying sheets of celluloid to wood, the herein described process, consisting of applying to one side of the sheet of celluloid an adhesive, containing alcohol or some equivalent latent solvent of celluloid, then placing said side of the celluloid against the wood, then placing the whole under pressure, then subjecting it to heat while under pressure, then artificially cooling the whole under pressure, whereby the solvent action due to the heat is at once destroyed, and the celluloid and adhesive are immediately hardened and set, substantially as shown and described. 3rd. As an improvement in the art of applying sheets of celluloid to wood, the herein described process, consisting of applying to one side of the celluloid an adhesive, containing alcohol, or some equivalent latent solvent of celluloid, then laying said side of the celluloid against the wood, then placing the whole under pressure with the outer surface of the celluloid in contact with a polished metal surface, then heating said polished surface sufficiently to render the adjacent surface of the celluloid plastic, and to transmit through said celluloid sufficient heat to render the alcohal or other solvent contained in the adhesive active, and to dissipate the excess thereof, then cooling said polished metal surface, whereby the solvent action due to the heat destroyed, substantially as shown and described.

No. 28,081. Galvanic Battery. (*Pile galvanique.*)

James Serson, Boston, Mass., U.S., 26th November, 1887; 5 years.

Claim.—1st. In a galvanic battery, of the character described, the porous cup C, in combination with one or more portable or detachable re-enforcing cups disposed within the same, substantially as shown and described. 2nd. In a galvanic battery, of the character described, the porous cup C provided with means for holding a portable or detachable re-enforcing cup in position within the same, substantially as set forth. 3rd. In a galvanic battery, of the character described, the porous cup C having the sockets *y*, in combination with the feeding or re-enforcing cups E, F, G, the cup E being provided with perforations *g*, substantially as described. 4th. In a galvanic battery of the character described, the jar A having the interiorly disposed annular projection *m*, provided with the channel *b* for containing free mercury, with which to keep the zinc B amalgamated, substantially as set forth. 5th. In a galvanic battery of the character described, the combination of the jar A provided with the channeled projection *m*, the porous cup C provided with the sockets *y*, the zinc B provided with the arm *d*, the carbon D provided with the arm *f*, the portable or detachable cups E, F, G, means for connecting the wires *l*, *w*, to the zinc and carbon, a cover for the jar A and means for securing the cover on said jar, substantially as described. 6th. In a galvanic battery of the character described, the jar A provided with channeled projection *m*, the zinc B, having its lower portion or edge inserted in the channel of said projection, the porous cup C centrally disposed in the jar A, one or more portable or detachable re-enforcing cups disposed within said porous cup, and the carbon D disposed between the re-enforcing cup or cups and the walls of said porous cup, in combination with an acidulated solution in the porous cup, an acidulated solution in the chamber between the porous cup and walls of the jar A, the mercury *t* in the channel *b*, and a re-enforcing material or materials in the re-enforcing cup or cups, substantially as set forth. 7th. In a galvanic battery of the character described, the enclosing jar A, provided with the lips *n*, and projection *m* having the channel *b*, the zinc B provided with the arm *d* and having its lower portion or edge inserted in said channel, the porous cup C centrally disposed in said jar, and provided with sockets *y*, the re-enforcing cups E, F, G disposed in said porous cup and secured by said sockets, the carbon D provided with the arm *f* and disposed between said re-enforcing cups and the walls of the porous cup, the clamping-bar K provided with the cam-lever L, arms *h* and hooks *j* and the screw-caps H, all constructed, combined and arranged substantially as shown and described. 8th. In a galvanic battery of the character described, the galvanic element or solution M comprising water, sulphuric acid, nitric acid, chromic acid and bichromate of potash, in about the proportions and compounded substantially as described, in combination with the galvanic element or solution N comprising water and sulphuric acid, in about the proportions and compounded substantially as specified. 9th. In a galvanic battery of the character described, the galvanic element or solution M, comprising water, sulphuric acid, nitric acid, chromic acid, and bichromate of potash, in about the proportions and compounded substantially as described, and the galvanic element or solution N, comprising water and sulphuric acid in about the proportions and compounded substantially as specified, in combination with free nitric acid, free sulphuric acid and free bi-chromate of potash for re-enforcing the element or solution M, substantially as set forth. 10th. In a galvanic battery of the character described, the jar A provided with the projection *m*, having the channel *b*, the zinc B disposed in jar, and having its lower portion or edge inserted in said channel, the porous cup C provided with the sockets *y*, the re-enforcing cups E, F, G disposed in said porous cup, and the carbon D disposed between the walls of said porous cup and said re-enforcing cups, in combination with a galvanic element or solution, comprising water, sulphuric acid, nitric acid, chromic acid and bi-chromate of potash and disposed in said porous cup, and a galvanic element or solution, comprising water and sulphuric acid, and disposed in the chamber *s* between said porous cup and the walls of the jar A, substantially as described.

No. 28,082. Gas Meter. (*Compteur à gaz.*)

Harrold J. Bell, Lincoln, Neb., U.S., 26th November, 1887: 15 years.

Claim.—1st. In a gas meter, the combination, with two or more chambers, diaphragms forming one side thereof, an operating shaft, a registering mechanism geared thereto, and connections between said diaphragms and the shaft for causing the rotation of the latter, of a chamber in which the shaft and operating parts are located, and with which one side of the diaphragms are normally in communication, passages leading from the central chamber to the chambers in rear of the diaphragms, exhaust passages to the exit pipe, a valve also located within the central chamber and operated from the main shaft for connecting the diaphragm chambers with the central chamber and the exhaust, and a supply pipe leading to the central chamber, substantially as described. 2nd. In a gas meter, the combination, with four chambers, the diaphragms forming one side of each, an operating shaft, a registering mechanism geared thereto, rods connecting opposite diaphragms, and connections between said rods and the shaft for causing its rotation when the diaphragms are moved inward in succession of a central chamber, with which one side of each of the diaphragms are normally in communication, and in which all the operating parts, save the register, are located, passages leading from the central chamber to each of the diaphragms, exhaust passages communicating with the exit pipe, and valves also located in the central chamber and operated from the operating shaft for connecting each of the diaphragm chambers with the central chamber in succession, and at the same time connecting the diaphragm chamber opposite the one so connected with the exit pipe through the exhaust passage, and a supply pipe leading to the central chamber, substantially as described. 3rd. In a gas meter, the combination, with the four chambers, the diaphragms forming one side of each, rods connecting opposite diaphragms, an operating shaft and connections between said rods and shaft for causing the rotation of the latter by the successive movement of the diaphragms, passages connecting each of the diaphragm chambers with a cham-

ber communicating with the gas supply, two exhaust passages, one for each pair of chambers, and two valves operated from the operating shaft, adapted to connect each of the chambers in succession with the supply, and at the same time connect the opposite chamber with the exhaust, and a registering mechanism connected with the main operating shaft, substantially as described. 4th. In a gas meter, the combination, with the operating diaphragms, the connecting rods, the operating shaft having the adjustable crank pin, with which said rods are connected, the central chamber connected with the gas supply valve, devices connected to the operating shaft for admitting gas to the diaphragm chambers in succession, all said operating parts being located within the central chamber of a registering mechanism operated from a shaft geared to the main shaft, said first-mentioned shaft passing out through the main casing between two of the diaphragms, substantially as described. 5th. In a gas meter, the combination, with the operating diaphragms and connecting rods, the main shaft to which they are connected, and a registering mechanism geared to said shaft, a rod secured to said shaft, the metal loop secured to the rod, and the weighted pawl hung upon the rod between the arms of said loop, so as to co-operate when moving in one direction with the connecting rods to arrest the action, but when moved in the opposite direction to permit their free passage, substantially as described. 6th. In a gas meter, the combination, with diaphragms and connecting rods, the main shaft and a registersng mechanism geared thereto, a casting secured to said shaft, a casting having a crank pin thereon, to which the connecting rods are attached, a guide rod and an adjusting screw connecting the two castings, whereby the throw of the crank-pin may be adjusted, substantially as described. 7th. In a gas meter, the combination, with diaphragms and connecting rods, the main shaft and a registering mechanism geared thereto, a casting secured to said shaft, a casting having a crank pin thereon to which said connecting rods are attached, a guide rod and an adjusting screw secured to the last-mentioned casting, and perforations in the casting on the crank-shaft with which they co-operate, whereby the throw of the crank-pin may be adjusted, substantially as described. 8th. In a gas meter, the combination, with the diaphragms and connecting rods, the main shaft and a registering mechanism geared thereto, a casting secured to said shaft, a casting having a crank pin thereon to which the connecting rods are attached, a guide rod and an adjusting screw connecting the two castings, and a perforation in the main casing in line with the shaft, whereby the screw can be manipulated by the insertion of the proper tool, and the crank-pin adjusted without removing the machinery from the casing, substantially as described. 9th. The combination, with the diaphragms and connecting rods, the main shaft and a registering mechanism geared thereto, the casting secured to the shaft, the casting having a crank-pin thereon, a guide rod and adjusting screw connecting the two, and the pivoted pawl mounted upon the extension of the guide-rod, and adapted to coaperate with the connecting rods to prevent the backward movement of the mechanism, substantially as described. 10th The frame for holding the diaphragms, consisting of the metal strips having the beaded edges, folded longitudinally and clamped upon the edges of the diaphragm, substantially as described. 11th. The improved frame for holding the diaphragms, consisting of the metal strips, having the beaded edges, folded longitudinally and clamped upon the edges of the diaphragm, and again bent longitudinally with the leather between them, substantially as described.

No. 28,083. Fire Escape. (*Sauveteur d'incendie.*)

Charles Matson, Russell, Ks., U.S., 26th November, 1887; 5 years.

Claim—In a fire escape, the combination of the slide C, the cover C_1 extending over said slide a portion of its length, the box B, the rods B_1 and B_2, the rod C_2, the hooks *a*, *a* and the ropes *c*, c_1, c_2, substantially as described.

No. 28,084. Piano-Forte. (*Forte-piano.*)

Emil Reich, Toronto, Ont., 26th November, 1887; 5 years.

Claim.—1st. The strings of a piano-forte stretched over the bridge, so that the strain shall be directed on the bridge at right angles to the plane of the sounding-board, substantially as and for the purpose specified. 2nd. In a piano-forte, the plate B having a step *a* formed on it below the bevel of the bridge D, the plate-pins *b*, *d* arranged alternately on the step *a* and bridge D, in combination with the strings E arranged in alternate pairs on the plate-pins *b* and *d*, so that the strain shall be directed in a line at right angles to the plane of the sounding-board A, substantially as and for the purpose specified. 3rd. In a piano-forte, the plate B having a step *a* formed on it below the level of the bridge D, the plate-pins *b*, *d* arranged alternately on the step *a* and bridge D, in combination with the strings E arranged in alternate pairs on the plate-pins *b* and *d*, and stretched over the bridge D, the bar F secured to the bridge D to resist the strain on the strings E when they are stretched, as described, substantially as and for the purpose specified. 4th. In a piano-forte, the plate B having a step *a* formed on it below the level of the bridge D, and its top level slightly above the level of the bridge D, the plate-pins *b*, *d* arranged alternately on the step *a* and bridge D, in combination with the strings E arranged in alternate pairs on the plate-pins *b* and *d*, and stretched over the bridge D, the bar F secured to the bridge D to resist the strain on the strings E when they are stretched, as described, substantially as and for the purpose specified.

No. 28,085. Electrical Light Circuit Cut-Off Switch. (*Interrupteur de circuit de lumière électrique.*)

The Ball Electric Light Company, (assignee of William A. Johnson), Toronto, Ont., 26th November, 1887; 5 years.

Claim.—The metal levers coupled together by an insulated connection, and pivoted upon the binding-posts of a dynamo circuit, in combination with contact-plates connected respectively with the binding-posts in the loop circuit, and with one of the binding-posts in the dynamo circuit, in such a manner that the current may be thrown on and off the loop circuit by the simple adjustment of the evers, substantially as and for the purpose specified.

No. 28,086. Swing. (*Balançoire.*)

Alexander Bettes and George A. Bettes, Kansas, Mo., U. S., 26th November, 1887; 5 years.

Claim.—1st. The combination of a suitable support, a single hanger pivoted thereto so as to have a sidewise-movement as described, and a suspending-bar to the lower end of which a seat or seats are attached, and the upper end of which is pivoted to said hanger, for the purpose set forth. 2nd. The combination of a suitable support, a single hanger secured thereto, suspending-bar carrying a seat or seats at its lower end, and the upper end of which is pivoted to said hanger, a bracket located on said bar intermediately of the seats and its pivotal point, a roller carried by said bracket, an arm projecting from said hanger on the opposite side of said bar so that upon which said bracket is located, and a cord or rope connected to the said suspending-bar at a point intermediately of the seats and its upper end, and passed over a roller carried by the outer end of said arm and also over the roller carried by the bracket, substantially as set forth. 3rd. In a swing, the hanger C pivoted to a support A, and having arm E formed integral therewith, roller E located in the outer end of said arm, in combination with suspending-bar C_1, the upper end of which is pivoted to said hanger, bracket F projecting from one side of said bar, roller C carried by the outer end of said bracket, spring *l* having one end connected to said bar, and cord J connected to the other end of said spring and passed over said rollers, substautially as set forth.

No. 28,087. Hydrant. (*Borne-fontaine.*)

Ekins Hand and George P. Gee, Rochester, N.Y., U.S., 26th November, 1887; 5 years.

Claim.—1st. In a hydrant, the combination, with the casing provided with an induction opening of the piston D provided with head *a* and slot *f*, the rod F provided with wedge-shaped lug *h* passing through the slot *f*, and the supporting and adjusting screw E extending through the end of the piston stem forming the support for the piston, and the fulcrum or bearing of the operating rod, as herein shown and described. 2nd. In a hydrant, the combination, with the casing having an induction opening, of the slotted piston D, the rod F provided with the wedge-shaped lug *h*, the supporting and adjusting screw E, the valve H and spring *k*, the whole arranged to operate in the manner and for the purpose specified. 3rd. In a hydrant, the combination with the discharge nozzle of a valve rod constructed with a valve which shuts against the inner end of the nozzle, a forked central portion that embraces the piston rod, a guide stem that rests in a bearing of the nozzle, and a screw stem that enters a nut on the opposite side of the hydrant from the valve, as herein shown and described.

No. 28,088. Lifting Machine. (*Machine à soulever.*)

Francois Laframboise, St. Philippe, Que., 29th November, 1887; 5 years.

Claim.—1st. A three-legged gin having a head sheaf block suspended from its joint, a hand lever fulcrumed on a hook attached to said head block, and arranged to engage with a chain secured to the head-block, and supporting a lower sheaf attached to the weight, a pawl pivoted to the head-block and arranged to automatically catch and hold the chain from slipping back, substantially as shown and described. 2nd. The combination in a lifting machine of a three-legged gin, and a head block composed of the bars D, E and F, the sheaf H pivoted in said bars, the hook *k* attached to said head block and supporting the lever P with the chain O attached to the head block, and supporting the sheaf N and held against the sheaf H by the pawl L, substantially as shown and described.

No. 28,089. Sewer Grate. (*Grille d'égout.*)

George Carlile, Hamilton, Ont., 20th November, 1887; 5 years.

Claim.—In a sewer grate A, the water-way or openings C made horizontal all around between the bars in connection with the hinges F, lugs E and frame D, all operating substantially as and for the purposes herein set forth.

No. 28,090. Direct-Acting Steam Engine. (*Machine à vapeur à effet direct.*)

Dexter D. Hardy, Chicago, Ill., U.S., 29th November, 1887; 5 years.

Claim.—1st. A direct-acting steam engine consisting of two or more single-acting rectilinear-vibrating cylinders, in combination with their pistons journalled directly to separate cranks situated at equal angular distances apart on the same shaft, together with their connecting parts, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the rods G, G, springs H, H, plate F and rectilinear-vibrating cylinder B, substantially as and for the purpose hereinbefore set forth. 3rd. The piston C journalled directly to the crank E, in combination with the cap N_1, spring O and vibrating cylinder B, substantially as set forth. 4th. The shoulder R formed by reducing the size of the cylinder at its end, in combination with open-end rectilinear-vibrating cylinder B, and casing A having a suitable surface for the cylinder to slide against, substantially as set forth. 5th. The combination of two or more rectilinear-vibrating cylinders B, with pistons journalled directly to separate cranks E, the crank-shaft D having two or more cranks at equal angular distances apart, the casing A having exhaust-parts leading directly into the cylinders B and the steam ports N operated by the valve T, substantially as herein set forth. 6th. The combination of the rectilinear vibrating cylinders B, the single-acting pistons C journalled directly to separate cranks E, the casing A enclosing said cylinders, pistons and cranks, the rods G, strings N and plates F, and the guide-cylin-P, and posts Q, substantially as and for the purpose herein set forth.

No. 28,091. Trunk Corner.

(Renfort d'angle de coffre.)

Francisco Garcia, New York, N. Y., U. S., 29th November, 1887; 5 years.

Claim.—1st. A corner iron for trunks and similar boxes, consisting of a triangular base plate provided with a central triangular recess, a triangular cap adapted to have play in the base plate, and an elastic block held with the cap and adapted to come in contact with the trunk corner, as set forth. 2nd. The combination, with a trunk of a triangular or pyramidal iron held in engagement with the corner of said tank, and an elastic block adapted to intervene between the iron and trunk, substantially as herein set forth. 3rd. The combination, with a trunk, of a base plate, a triangular or pyramidal cap held to slide in said base, an elastic block intervening the trunk and cap, and means for attaching the plate to the trunk, substantially as set forth. 4th. The combination, with a trunk, of a triangular or pyramidal iron adjustably held in engagement with the trunk corner, and an elastic block intervening the iron and trunk, substantially as herein set forth. 5th. The combination, with a trunk, of a corner iron held in yielding connection therewith, substantially as herein set forth. 6th. A corner iron for trunks and similar boxes, consisting of a triangular base plate adapted for attachment to the trunk, provided with a central triangular recess, a triangular pyramidal cap fitted in said recess, and an elastic block within the cap fitted to the contour thereof, and also to the countour of the corner over which the base is adapted to be secured, substantially as and for the purposes herein set forth. 7th. The combination, with a trunk and a triangular base plate secured at and over the corners, provided with a central and triangular recess, of a triangular pyramidal cap fitted in the recess of the base having play therein, and extending beyond the said base plate, and an elastic block held between the trunk and cap conforming to the inner contour of the cap and outer corners of the trunk, substantially as shown and described.

No. 28,092. Seal Press. *(Presse à sceller.)*

Albert B. Schofield, Jersey, N. J., U. S., 29th November, 1887; 5 years.

Claim.—1st. The combination in a seal press, of a box or frame having walls converging from the front thereof inwards, and a die having its side edges correspondingly converging and snugly fitting the side walls of the box or frame, the die being substantially parallel with the bottom of the box or frame, and movable toward and from the same to produce pressure on opposite faces of the seal body, substantially as herein described. 2nd. The combination, with the box or frame comprising the bottom and side portions or walls of a die or presser, substantially filling the space between the side walls and movable towards and from the bottom, a cam shaft journalled in the side portions of the box or frame, and provided with a cam acting upon the die or presser, and having a flattened or cut-away portion on one side of its centre in order to relieve the die or presser once in each revolution, and having its remaining periphery gradually increasing in radius from one end to the other of said flattened portion, and an operating lever or handle having a ratchet and pawl connection with the cam shaft, substantially as herein described. 3rd. The combination, with the box or frame C having a bottom and side portions, of a die or presser D movable towards and from the bottom of the box or frame and which has on its back the bearers or projections d_2 and the intervening space d_3 of the cam shaft, having the cams or divided cam E, E acting on said bearers or projections, and the operating lever or handle having a ratchet and pawl connection with the cam shaft between the cam portions E, E and which is received in said space d_3, substantially as herein described.

No. 28,093. Carriage Top Iron.

(Ferrure de couverture de voiture.)

Daniel Conboy, Toronto, Ont., 29th November, 1887; 5 years.

Claim.—A lazy-back riser, or arm-rail, having a thread cut on it, substantially at the point marked a, in combination with the collar B, having a narrow nut b made at its bottom, substantially as shown and for the purpose specified.

No. 28,094. Thill Coupling. *(Armon de limonière.)*

Nels W. Hawkenson, Litchfield, Minn., U. S., 29th November, 1887; 5 years.

Claim.—1st. The combination, in a thill-coupling, with the clip having the open hooks 5, of the hub 8, the pins 9 projecting from the opposite ends of said hub and adapted to be engaged with said hooks, the wedge-shaped block 11 and the rubber 19 adapted to fit between said hub 8 and the forward portion of the clip, and hold said pins in said hooks and prevent rattling, substantially as described. 2nd. The combination, in a thill-coupling, with the hooks 5 and the pins 9 fitting therein, of the hub 8 to which said pins are secured, the block 11 having the projections 18 embracing the ends of said hub, and the holes 15 in said projections engaging said pins 9, and the rubber block 19 secured to said block 11, substantially as described. 3rd. In a thill-coupling the anti-rattling device, comprising the block 11, adapted to be pivoted upon the axis of the coupling, and having a rubber block 19 secured to one face thereof, substantially as described. 4th. The combination, in a thill-coupling, of the clip 3 having the hooks 5 and a serrated surface between said hooks, the hub 8 having the pins 9 engaging said hooks, the block 11 pivoted upon said pins 9, and provided with the serrations 17, and the rubber block 19 secured to said block 11, substantially as described.

No. 28,095. Rotary Plough. *(Charrue rotative.)*

John Q. A. Newsom, Scott, Ks., U.S., 29th November, 1887; 5 years.

Claim.—1st. A plough, having a revolving plough shaft, on which is mounted a series of independent cutting knives, placed closely together, with the point of each knife overlapping the cutting-blade of the forward knife, and set in a single spiral line, so as to form a continuous series of spiral cutters, substantially as described. 2nd. A plough, having a revolving plough shaft, on which is mounted a series of cutting blades, independently arranged in the form of disks, said disks being united to form a continuous single line series of said spiral cutting blades, the points of said blades overlapping the cutting portion of the forward blades, substantially as described. 3rd. A plough, having a revolving shaft on which is mounted spirally a series of curved knife-edged cutters, having sharp points, the point of each cutter overlapping the knife-edged portion of the next adjacent blade in the rear, substantially as described. 4th. In a plough, the combination of a revolving plough shaft, a series of sectional brackets secured thereto, forming a continuous spiral when mounted, independent cutters mounted in sockets in said sectional brackets, and set bolts for holding said cutters in their desired position, substantially as described. 5th. The combination, with the fixed or stationary draft bar, of a suspended frame and a journalled plough shaft, a segment attached to the plough shaft pin at each of its ends, adapted to be turned, and mechanism operated by the driver for adjusting the plough frame and shaft relatively to the draft bar and locking them in position, substantially as described.

No. 28,096. Instrument for the Transfusion of Blood. *(Appareil pour la transfusion du sang.)*

Eugene E. Allen, Grand Rapids, Mich., U. S., 29th November, 1887: 5 years.

Claim.—1st. A cylindrical cap, with an elastic tube coiled within the said cap, a roller to produce moving pressure upon said tube, and mechanism for operating said roller, substantially as described. 2nd. In an instrument for the transfusion of blood, the cylindrical cap, the elastic tube coiled within the cap, the rolls adapted to press upon the tube and give a continuous forward pressure, the lever M, R, with suitable mechanism for adjusting the roller for greater or less pressure upon the elastic tube, substantially as described. 3rd. The combination of the cylindrical cap and enclosed elastic tube, and a hot water reservoir supporting and nearly surrounding said cap, substantially as and for the purpose set forth. 4th. The combination, as herein set forth, of the elastic tube coiled within the cylindrical cap, and provided with the glass connecting tube or tubes, one or more, the roller and the mechanism for operating said roller, substantially as described. 5th. The following parts, in combination, viz., the cylindrical cap, the elastic tube coiled within the cap, the roller adapted to produce the moving pressure upon the tube, the springs for regulating the pressure, the brace for connecting and disconnecting the spring, the centre standard for supporting the springs, the ratchet wheel and dog and axle with chain for adjusting the roll to the elastic tube, substantially as described,

No. 28,097. Hydro-carbon Heater.

(Foyer à hydro-carbures.)

Josiah Corliss and Joseph J. Blackmore, St. Thomas, Ont., 29th November, 1887; 5 years.

Claim.—1st. The combination of the stove or furnace L, having a fire pot or chamber M, a steam generator D having relief pipe N and located within the fire-pot, and connected to a feed water pipe A, and tube G outside the stove or furnace, and an atomizer H connected to tube G and feed pipe I and provided with an air tube K, as set forth for the purpose described. 2nd. The atomizer H, having an air tube K connected to the steam nozzle, for the purpose set forth.

No. 28,098. Combined Bottle and Stopper.

(Bouteille avec bouchon combinés.)

George A. Fullerton, Boston, Mass., U. S., 29th November, 1887; 5 years.

Claim.—Bottle A, having grooves a_1 and shoulders a_3, in combination with stopper B, bail B_1, having inwardly-turned ends, and a band D, the ends of which are perforated and lapped to receive one of the inwardly-turned ends of bail B_1, whose other inwardly turned ends is through another perforation in band D, the bail in place having its inwardly turned ends extending through the perforations in band B into grooves a_1, substantially as and for the purpose set forth.

No. 28,099. Electric Arc Lamp.

(Lampe électrique à arc.)

Clarence B. Noble, Cleveland, Ohio, U. S., 29th November, 1887; 5 years.

Claim.—1st. The herein described mechanism for automatically switching the current from one set of carbons to the other, consisting of the magnet D carrying a coil of fine wire, which is located in a shunt around the arc, and also a coil of coarse wire which is located in a shunt around the arc, and also a coil of coarse wire, which is adapted to form a part of the main circuit, the core of said magnet being movable, connected with the tilting lever h, and carrying contact piece b_1, in combination with two pair of contacts, so arranged that when the piece b_1 bridges one pair, the main current shunts the magnet D, and when it bridges the other pair, the main current passes through the said magnet, as set forth. 2nd. In an electric lamp, in which two sets of carbons are operated successively, the combination with a tilting lever, carrying at each end a clutch for operating to feed each set of carbons, of a bar K for making operative successively, the clutches, when they are thrust within its reach by the tilting lever, the motions of the lever being controlled by the consumption of a set of carbons, as specified. 3rd. In an electric lamp, a slotted core for the main and shunt magnets, a slotted block sliding within the slot in the core a pin passing through the core and the slot in said block, an adjustable screw carried by said pin and a pair of contacts adapted to be brought together by the movement of said screw, the said contacts completing a circuit to cut out the lamp, substantially as described.

No. 28,100. Horse Detacher.

(Système de dételage.)

George T. Parker, Smith's Grove, Ky., U.S., 29th November, 1887; 5 years.

Claim.—1st. In combination with whiffletree tip, having an external longitudinal mortise, side wings, and a trace-pin, a trace-guard pivoted to said wings and having a right angled outer end extending across and resting upon the outer end of the trace pin, and adapted at its inner end to receive the outer end of a plate spring secured at its inner end within said mortise, and impinging at its outer end against said trace-guard, and suitable means for retracting the trace. 2nd. A whiffletree tip, having an outwardly-extending trace-pin a, longitudinal mortises and side wings, a trace-guard pivoted to side wings and adapted to impinge upon the outer end of the trace-pin, and having a toothed or serrated inner face, a plate spring secured at one end within said mortise, and engaging at its other end with the trace-guard, and a trace-detaching device having a toothed or serrated outer portion, with which the toothed or serrated portion of the trace-guard engages, so as to secure the reciprocation of said trace-detacher, as the guard swings back and forth, substantially as set forth. 3rd. The combination of a longitudinally reciprocating trace-detacher, having a toothed or serrated inner portion, a trace-guard having a toothed or serrated portion to engage with and reciprocate the trace-detacher, and devices, substantially as described, for holding in position and for retracting said trace-guard and reciprocating the trace-detacher. 4th. The combination, with a whiffle-tree, having a tenoned end, a whiffle-tree tip, having a socket in its inner end to receive said tenon, a longitudinal mortise in its exterior face and side wings, a trace-guard pivoted to said wings, a plate spring within said mortise, its outer end being in engagement with said trace-guard, and a screw for securing the inner end of said spring within said mortise, and also connecting the whiffle-tree tip together, substantially as set forth. 5th. The combination of a whiffle-tree tip, having a trace-pin, a circumferential groove or mortises surrounding said pin, a longitudinal mortise and side wings, a trace-guard pivoted to said wings and having a toothed or serrated inner face, a plate spring secured within the longitudinal mortise to impinge against and hold the guard in operative position, and a trace-detacher having a disk or plate surrounding the trace-pin, and, when at rest, fitting within the circumferential mortise, and an inwardly-extending toothed portion, engaging with the toothed portion of the trace-guard, and by it reciprocated within the longitudinal mortise, substantially as set forth.

No. 28,101. Hedge Fence. (*Haie vive.*)

Daniel W. Aylworth, Kalamazoo, Mich., U.S., 29th November, 1887; 5 years.

Claim.—1st. In a hedge fence, having the plants or canes composing the same bent, as described, the transverse bars or pins placed under the stalks, near their base, at suitable distances apart along the line of the hedge, in combination with a series of transverse bars or pins engaging with the upper sides of the stalks of the plants or canes, the bars or pins composing each series being in line with end connected to each other, and to one of the bars or pins on the under side of the stalk, all constructed and arranged substantially as and for the purpose shown and described. 2nd. In a hedge fence, the combination, with the row of hedge plants or canes inclined, as described, of the transverse bars or pins C, arranged on the under side of the stalks of the plants or canes near their base, and the series of transverse bars or pins D engaging with the upper sides of the stalks of the plants or canes, the bars or pins D composing each series, being connected with each other, and with one of the bars C by suitable connections E, all constructed and arranged substantially as shown and described.

No. 28,102. Seal for Car Doors, etc.

(Fermeture scellée pour portes de chars., &c)

Albert P. Schofield, Jersey, N. J., U. S., 29th November, 1887; 5 years.

Claim—1st. The seal herein described, consisting of a bail or loop having shouldered arms, and a soft metal body having a recess or recesses extending inwards from its end, and formed with internal shoulders and receiving the arms of the bail or loop, the soft metal of the body being closed by pressure closely around the arms of the bail or loop to hold said arms in permanent engagement with the body, substantially as herein described. 2nd. The seal hercin described, consisting of a soft metal body having a recess or recesses formed with internal shoulders, and a metal bail or loop having shouldered arms which engage automatically with the shoulders of the body by the resilience of the metal in the bail or loop, and which will spring out of position if cut close to the body, substantially as herein set forth. 3rd. A seal consisting of a body having its opposite faces substantially flat and parallel, and having its opposite edges converging or made wedge-shaped, and a bail or loop having its end portions or arms secured in the body by pressure upon opposite faces thereof, substantially as herein described. 4th. The seal herein described consisting of a soft metal body, wedge-shaped or having converging edges, having a recess or recesses extending from its end inward and formed with internal shoulders, and a bail or loop having arms provided on their outer sides with shoulders which are held in permanent engagement with the shoulders of the body by flattening or thinning the soft metal of the body between the arms, substantially as herein set forth.

No. 28,103. Game of Parlour Base Ball.

(Jeu de paume de salon.)

George A. Drysdale, Windsor, Ont., 29th November, 1887; 5 years.

Claim.—The combination of the field A to indicate the positions of the players, the indicator B to designate the progress of the play, and the key G to indicate the movements on the field, together with the pins taken from the nine small holes representing the players, benches to keep the course of the game present to the eye as in an out doors game, applied to the game of base-ball.

No 28,104. Fire-arm. (*Arme à feu.*)

Franz Von Dreyse, Sommerda, Germany, 30th November, 1887; 5 years.

Claim.—1st. By fire-arms with back loading and cylinder closure, the combination with two wings D_1, D_2, arranged on the trigger-plate E, and movable around the shaft d. 2nd. In combination with back-loading fire-arms, the pressing piece B, and the band h operating on the said pressing piece B, and influencing on the pivots d^2. 3rd. In combination with back-loading fire-arms, a repeating-mechanism consisting of a disengaging gear F and shaft f, whereby the said gear F engages and disengages the pressing piece B, all substantially as described and for the purpose specified.

No. 28,105. Method and Apparatus for Producing and Utilizing Electricity. (*Mode et appareil de production et d'application de l'électricité.*)

Robert A. Parrish, Philadelphia, Penn., U.S., 30th November, 1887; 5 years.

Claim.—1st. The herein-described method of generating electricity, which consists in condensing steam upon chilled surfaces, and collecting the electricity produced thereby upon a suitable conductor, substantially as and for the purpose specified. 2nd. The herein described method of generating electricity, which consists in condensing steam upon chilled surfaces, collecting the electricity produced thereby upon a suitable conductor, then charging numerous leyden jars or accumulators with the current so collected, and finally causing said jars to be discharged into a line conductor in such rapid succession as to make a practically continuous current, substantially as and for the purpose specified. 3rd. The herein-described method of generating electricity, which consists in condensing steam upon chilled surfaces, collecting the electricity produced thereby upon a suitable conductor, then charging two or more sets of leyden jars, or accumulators with the current so collected, then the said jars to be discharged into line conductors, and finally causing said currents to unite in a commun conductor. 4th. The method of obtaining a practically constant electrical current, which consists in causing a large number of charged leyden jars to be discharged in rapid succession into a line circuit. 5th. The herein-described method of generating electricity, which consists in condensing steam upon chilled surfaces, collecting the electrity produced thereby upon a suitable conductor, then charging a set or sets of leyden jars or accumulators with the current so produced, then causing the current so accumulated to be passed into one or more second sets of leyden jars, charging them electrically, and finally causing said last-mentioned jars to be discharged in such rapid succession as to make a practically continuous current. 6th. The method of generating an electric current, which consists in causing a travelling jet of steam to be projected upon chilled surface and condensed, whereby the projected steam does not strike for any material period of time continuously upon the same portion of the chilled surface, and finally conveying off the electricity so produced by means of suitable conductors. 7th. The combination of the boiler A, pipe F, condensed C, conductor G, leyden jars J, contact table k having contacts connecting with the leyden jars, revolving contact L in connection with conductor G, contact N and line wire I in circuit with said contact N, substantially as and for the purpose specified. 8th. The combination of the boiler A, pipe F, condenser C, refrigerator box D, conductor G, leyden jars J, contact table K having contacts k connecting with the leyden jars, revolving contact L in connection with conductors G, contact N and line wire I in circuit with said contact N, substantially as and for the purpose specified. 9th. The combination of a boiler A, steam pipe F, loose revolving nozzle f, condensing dome C and electrical conductor G, substantially as and for the purpose specified. 10th. The combination of a series of leyden jars, a travelling conductor making contact with said jars in rapid succession to charge them, a source of electrical energy in connection with said conductor, a line circuit and a travelling conductor making contact with said jars in rapid succession, to cause their discharge to pass down into line, substantially as and for the purpose specified. 11th. The combination of a series of leyden jars, a conductor making contact with said jars in rapid succession to charge them, a source of electrical energy in connection with said conductor, a line circuit and a conductor connecting with said line and adapted to make contact with said jars in rapid succession, to cause their discharges to pass down into line, substantially as and for the purpose specified. 12th. The combination of a series of leyden jars, a travelling conductor making contact with said jars in rapid succession to charge them, a source of electrical energy in connection with said conductor, a line circuit, a travelling conductor connecting with said line and adapted to make contact with said jars in rapid succession to cause their discharges to pass down into line, a generator of electricity connecting with the travelling charging contact conductor, and a safety discharge conductor arranged close to, but insulated from, the working or line conductor, or current conveying portion of the electrical apparatus.

No. 28,106. Whiffletree and Neck Yoke Bar.

(Palonnier et volée d'avant de voiture.)

Charles Stoner and Sinken B. Welsh, Montpelier, Ohio, U. S., 30th November, 1887; 5 years.

Claim.—1st. The main bar presenting in cross section flanges at angle to each other, in combination with a brace rod, a bridge between the bar and rod, and means for securing the parts together, substantially as described. 2nd. The main bar formed with lips at opposite ends, the brace-bar passed through said lips and having adjusting means at their ends, and a bridge interposed between the b ace-rod and main bar, and bearing against the main bar, substantially as described. 3rd. A tree or yoke composed of the main bar presenting in cross section flanges at an angle to each other, a portion

of said flanges being bent to form lips, a brace rod passed through said lips and means for adjusting the tension of said parts, substantially as described. 4th. The combination, with the main bar and brace-rod, and bridge formed integral with the brace rod and bearing against the main bar, of the washer at the end of the bar and the nut applied to the rod outside of the washer, substantially as described. 5th. The combination, with the main bar and brace-rod, of the hook applied to the bar, the clip straddling a portion of the hook and formed with a washer extended across the end of the bar, substantially as and for the purposes described.

No. 28,107. Wire Strainer and Key.

(Tendeur de fil de fer et clé.)

John Flynn, Macedon, and James F. Kilburn, South Yarra near Melbourne, Victoria, 30th November, 1887; 5 years.

Claim.—1st. In barrel wire-strainers, the combination of addition of one or more strain-retaining fingers to the barrel, substantially as herein described and shown. 2nd. In barrel wire-strainers, the combination of claws with the retaining-finger, or fingers, substantially as herein described and shown. 3rd. The combination of parts forming the straining key for wire-strainers, substantially as herein described and shown.

No. 28,108. Sleigh. (*Traîneau.*)

Leonard Bender, Elizabethville, Penn., U.S.., 30th November, 1887; 5 years.

Claim.—1st. The herein-described sleigh, comprising the runners having a portion thereof removed at the front end for the purpose stated, the inclined standards having cross-pieces connected thereto, the horizontal side bars having long and short arms, the said long arm being connected to the said runners and the shield or plate, substantially as shown and described. 3nd. The combination, with the runners having a portion of their bend removed, and the shield or plate of the side bars having each a long and short arm connected to said runners, substantially as shown and for the purpose described. 3rd. The runners having a portion of their bend removed, so as to aid in the bending thereof, substantially as shown and described.

No. 28,109. Pitman Box. (*Coussinet de manivelle.*)

Thomas W. Broomell, Christiana, Penn., U.S., 30th November, 1887; 5 years.

Claim.—1st. In a pitman box, the "follower wedge" E forced in any direction by a spring or any other means, and acting upon the wedge D, which moves the movable box B towards the fixed bar C, substantially as and for the purpose set forth. 2nd. In a pitman box, the wedge D acting upon the movable box B, and acted upon by the "follower wedge" E, which is forced outward by the spring F having its tension regulated by set screws, as described, and substantially for the purpose set forth. 3rd. The movable box B acted upon the wedge D, moved by the "follower wedge" E acted upon by a spring or other means, substantially as set forth. 4th. The combination of the "follower wedge" E, wedge D, movable box B, spring F, adjusting nuts H and I, fixed box C and connecting rod A, all arranged substantially as and for the purpose set forth.

No. 28,110. Method of Welding Steel.

(Mode de soudage de l'acier.)

William B. Middleton, Lancaster, Penn., U.S., 30th November, 1887; 5 years.

Claim.—The method of fluxing and welding together pieces of bessemer or other steel, which consists in treating them with a solution of silicate of soda, or solution of other silicate, and then at a welding heat subjecting said pieces to a welding pressure in roll sunder the hammer or otherwise, as specified.

No. 28,111. Steam Injector. (*Injecteur de vapeur.*)

Thomas J. Carroll, Hamilton, Ont., 30th November, 1887; 5 years.

Claim.—1st. In a steam injector, the combination of injector A having seats J and J_1, and provided with a steam entrance tube B, combining tube C and delivery tube D, substantially as and for the purpose hereinbefore set forth. 2nd. In a steam injector, the combination of the overflow ball valve F, and sleeve D, substantially as and for the purpose hereinbefore set forth. 3rd. In a steam injector, the combination of the plug E, and the delivery tube D, substantially as and for the purpose hereinbefore set forth. 4th. In an injector, the combination of the body A, steam entrance tube B, combining tube C, delivery tube D, sleeve D_1, plug E, ball valve F, and sliding ring H, substantially as and for the purpose hereinbefore set forth.

No. 28,112. Device for Raising and Lowering Carriage Tops. (*Appareil pour lever et abaisser les soufflets des voitures.*)

Robert Ward, Thamesville, Ont., (assignee of William M. Ward, Grand Blanc, Mich., U.S.), 30th November, 1887; 5 years.

Claim.—1st. In a device for raising and lowering carriage tops, a right angled rocking-bar journalled back of the seat having the angled portions connected with clamps upon the carriage braces, as and for the purpose set forth. 2nd. In a device for raising and lowering carriage tops, a hand lever connected by intermediate devices with the carriage braces, whereby the same may be raised or lowered, as and for the purpose set forth. 3rd. In combination with a rocking bar and jointed arms connected with the carriage braces, a hand lever connected with the rocking bar, as and for the purpose set forth. 4th. In a device for raising and lowering carriage tops, clasps embracing the braces and connected with arms operated by a lever, as and for the purpose set forth.

No. 28,113. Neck-tie Holder. (*Fût de cravate.*)

Edward Currie, Jr., and Robert J. Quigley, Toronto, Ont., 30th November, 1887; 5 years.

Claim.—1st. A neck-tie holder consisting of a spring or springs arranged to fit into the neck-loop of a tie, and hold the same by the force of the expansion of the said spring or springs, a loop C being formed in the legs A, substantially as and for the purpose specified. 2nd. A neck-tie holder consisting of a spring or springs connected to a suitable support, and arranged to fit into the neck-loop of the tie, and hold the same by the force of the expansion of the spring or springs, substantially as and for the purpose specified.

No. 28,114. Process of Manufacturing Castings from Wrought Iron and Steel by Adding Aluminium.

(Procédé de fabrication de la fonte de fer et d'acier ductiles en ajoutant de l'aluminium.)

Thorsten Nordenfelt, Westminster, Eng., (assignee of Carl G. Wittenstrom, Stockholm, Sweden), 30th November, 1887; 15 years.

Claim.—The hereinbefore described process of manufacturing castings from wrought iron or steel, consisting in the admixture with the molten iron or steel of aluminium in about the proportions specified and then casting, substantially as and for the purposes set forth.

No. 28,115. Vehicle Hub. (*Moyeu de roue.*)

The Batavia Wheel Company, (assignee of John M. Sweet), Batavia, N.Y., U.S., 30th November, 1887; 5 years.

Claim.—1st. The two part wooden hub having the annular hard channels, in combination with the metallic band made in a single piece diametrically smaller than the hub, the ends of the band extending laterally bevond the sockets and within the hub-channel, the walls of the said sockets rising above the band to the peripheral line of the wooden hub, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the wooden hub having the central recess, the metallic band made from a single piece having the radial outwardly extending spoke-sockets entering within the hub-recess, the band properly extending laterally beyond the walls of the same within the wood, and the peripheral lip forming a part of the band slightly overlapping the wood, substantially as and for the purpose hereinbefore set forth.

No. 28,116. Vehicle Hub. (*Moyeu de roue.*)

Barnhard Schod, Joseph C. Shults, Frank J. Shults, Louis E. Smith and Levant M. Hackley, Batavia, N. Y., U. S., 30th November, 1887; 5 years.

Claim.—1st. The hub composed of the wooden centre made in one piece, and formed with the tenon-mortises and bevelled shoulder at its rear portion, in combination with metallic spoke band made in one piece, and provided with spoke-mortises enlarging from top to bottom, and with an inner bevelled rear end to fit upon the bevelled shoulder of the wooden centre, substantially as described. 2nd. The hub composed of the wooden centre formed with the bevelled shoulder and tenon-mortises, in combination with the dovetailed mortised spoke-band formed with the bevelled inner end to rest upon the bevelled shoulder of the wooden center, and made thickest at the middle portion with an inclination, as shown, towards both ends, the dovetails enlarging from the top to the bottom of the mortise-band, and the spokes forced into and filling said dovetailed mortises and resting above their tenons on the wooden portion of the hub, substantially as described. 3rd. The hub composed of the centre portion, the spoke-band made in one piece to encircle the central portion, the mortises enlarging from top towards the bottom to form dovetails, and the spokes forced into said dovetailed mortises and compressed by the band at the point where said spokes enter the mortises, whereby the spokes are expanded from the top towards the base of the mortises to form dovetails fitting the mortises without the aid of any wedge projection at the base of the mortise to split and expand the spoke, substantially as described. 4th The within method of fitting a spoke to a hub, and forming a dovetail to the spoke, consisting in forcing a wooden spoke through a metallic band into a mortise, which shall expand from its mouth downwardly to form a dovetail, and binding the spoke by the metal band where the spoke enters the mortise, and permitting it to expand below such binding-point, whereby the spoke above the base and below the mouth of the mortise is caused to expand to change its normal shape and form a dovetail filling the dovetailed mortise, substantially as described.

No. 28,117. Hose Coupling. (*Joint de boyau.*)

James H. Sewall, Portland, Me., U.S., 30th November, 1887; 5 years.

Claim.—1st. A two-part hose coupling, composed of like halves or portions, each half consisting of the internally recessed shell a, the flanged gasket c, the nozzle a^2 having the externally recessed end a^1 which enters the shell a, and the nozzle flange a^3 and fastening for securing the nozzle firmly to the shell or casing, substantially as described. 2nd. A two-part hose coupling, composed of like halves or portions, each half consisting of the shell and nozzle attached thereto, and means as the fastening a^4 for attaching the shell and nozzle, substantially as described 3rd. A two-part hose coupling composed of like halves or portions, each half consisting of the shell a, a detachable nozzle fitted therein, and having a recess between the nozzle or shell provided with a drip passage, substantially as and for the purpose set forth. 4th. The two-part hose coupling composed of like halves or portions, each half having a steam passage through it, and an air space surrounding the steam passage, substantially as and for the purpose specified. 5th. A two-part hose coupling, composed of like halves or portions, each half having a steam passage through it, and a drip passage leading from the steam passage at the lowest point thereof for the escape of water of condensation, and a control-

ling device for the said drip passage, substantially as described. 6th. The two parts or halves of the hose coupling and hose to which they are attached, combined with a chain connected with the hose, substantially as and for the purposes specified.

No. 28,118. Automatic Brake and Car Starter. (*Frein et levier de mise en mouvement automatiques.*)

Amos M. Vereker and Stephen M. Yeates, Dublin, Ireland, 30th November, 1887; 5 years.

Claim.—1st. In a car brake and starter, the combination, with a car axle and drums mounted thereon, of a supplemental shaft, a fixed drum on the supplemental shaft, a spring connected to said drum, loose drums on the said shaft, chains connecting the drums of the axle and supplemental shaft, clutches acting in opposite directions upon the loose drums, and means for operating the said clutches, substantially as herein shown and described. 2nd. In a car brake and starter, the combination, with the car axle, drums mounted thereon, a supplemental shaft between the axles, a fixed drum on the supplemental shaft, a spring connected to said drum, loose drums on the said shaft, chains connecting the said drums and clutches acting in opposite directions upon the loose drums of the supplemental shaft, of horizontal rods engaging the clutches, a spring connecting the said rods and holding the clutches into engagement, and means for throwing and holding the clutches out of engagement, substantially as herein shown and described. 3rd. In a car brake and starter, the combination, with the car axles, drums thereon, a supplemental shaft between the axles, a fixed drum on the said shaft, a spring connected to the drum, loose drums on the supplemental shaft, chains connecting the said drums and clutches acting in opposite directions upon the loose drums, of horizontal rods engaging the clutches and provided with arms connected by a spring, and with levers at its ends, a spring engaging the said levers, and means for disengaging the spring from the said levers, substantially as herein shown and described. 4th. In a car brake and starter, the combination, with the car axles, of drums fixed thereon, a supplemental shaft between the axles carrying loose drums, clutches on the outer drums on said shaft acting in opposite directions on clutches upon the centre drum on said shaft, chains running in connection with the drums on the axles and the outer drums on said shaft, a spring connected with the centre drum on said shaft, and means for operating said clutches, substantially as shown and described. 5th. In a car brake and starter, the combination, with drums fixed on the car axles of loose drums mounted on a supplemental shaft between the axles, clutches on the outer drums on said shaft, engaging in opposite directions, clutches on the centre drum on said shaft, chains arranged in connection with the drums on said axles, and the outer drums on said shaft, a spring connected with the centre drum on said shaft, and means for engaging and disengaging the clutch faces of the drums on said shaft, substantially as shown and described. 6th. In a car brake and starter, the combination, with a spring and a loose drum mounted upon a supplemental s aft between the axles, and with which said spring is connected, and loose drums mounted on said shaft at each side of said first-named drum, of drums fixed to the axles of the car chains running in connection with said fixed drums, and the outer drums on said shaft, clutches upon said outer drums engaging clutches on opposite sides of said centre drums, and means for throwing said clutches in or out of engagement, substantially as shown and described.

No. 28,119. Boiler. (*Chaudière.*)

Reginald W. Jewett, Birmingham, Eng., 30th November, 1887; 5 years.

Claim.—1st. The combination, with a boiler, of the combustion chambers F for the purpose of giving more heating surface, substantially as herein specified. 2nd. The air chamber G, through which the air is drawn from the combustion chambers F to create a draught, substantially as specified. 3rd. The air-tight tank which contains the coke or other fuel, and which is filled at the sliding doors e^1 and e^2, as and for the purpose herein set forth.

No. 28,120. Ornamentation of Sheet Metal. (*Ornementation du métal en feuille.*)

James Wood, Pittsburg, Penn., U. S., 30th November, 1887; 5 years.

Claim.—As a new article of manufacture, sheet metal which has been embossed, the raised or sunken portions whereof are coloured, substantially as and for the purposes described.

No. 28,121. Mechanism for Operating Railway Gates and Signals. (*Mécanisme de manœuvre des barrières et des signaux de chemins de fer.*)

John Hahn, St. Louis, Mo., U.S., 30th November, 1887; 5 years.

Claim.—1st. The combination of a shaft I_3 on the road bed, provided with a toothed wheel and winding drums, vertically movable gates crossing the roadway, and chains H_3 connecting the said winding drums with the mechanism for actuating the gates, the said shaft being operated by a vertically movable rack adjustably applied to a railway carriage and under the control of the engineer, substantially as described. 2nd. The combination, with the gate-actuating devices in the road bed adapted to be operated by the locomotive, of a gate having spring-actuated telescopic posts, braced and adapted to fold into a pit casing, the spring-actuated sliding rack connected to the devices in the road bed, and provided with angular offsets and a latching and unlatching device, substantially as described. 3rd. The combination of a gate, having spring-actuated telescopic posts, and braced and adapted to fold into a pit below the level of the roadway with the springs actuated sliding rack connected to winding up and unwinding devices on the roadway, and an automatic latching, an unlatching device for said gate, substantially as described. 4th. The combination, with a gate provided with spring-actuated telescopic posts, of latches connected spring actuated bolts provided with pivotal boxes, the depending lugs, angular offsets in a sliding rack, a pinion engaging therewith, a winding drum on the pinion shaft, and a chain connecting the winding drum with the gate, substantially as specified. 5th. The combination, with a telescoping gate-post, inclosing an elevating spring, of a rack applied to one of the vertically movable sections of this post, a chain and winding drum on a shaft jonrnalled in a signal bearing post, a pinion engaging with said rack, an intermediate clutch device, an alarm signal device fixed to said post, a visible signal hinged to the alarm signal, a spring for throwing up the signal or hemisphere, a spring catch for fastening it shut, and a releasing device for this catch, substantially as described. 6th. A railway gate, having telescopic posts, in combination with elevating springs therefor, a locking device and means for collapsing the said posts, substantially as specified. 7th. The combination, with a railway gate having telescopic posts, of a signalling device, and means for connecting the latter with one of the movable sections of said posts, substantially as described. 8th. The combination of the hinged hemispherical spring-actuated signal, with the vertically movable shade of a night signal, and the flexible connection, substantially as described.

No. 28,122. Mowing Machine. (*Faucheuse.*)

Arthur Mowat, in trust (assignee of William J. Clokey, Toronto, Ont.), 30th November, 1887; 5 years.

Claim.—1st. An annular frame, having a continuous groove or recess formen around its periphery, to receive a series of loose rollers and floats alternately arranged, so that the rollers are separated from each other by said floats, the said rollers and floats being retained in the groove or recess by a ring attached to or forming part of the rim of a wheel, and having a groove or recess formed in the said ring to inversely correspond with the groove or recess in the annular frame, substantially as and for the purpose specified. 2nd. An annular frame, having a continuous groove or recess formed around its periphery, to receive a series of loose rollers and floats alternately arranged, so that the rollers are separated from each other by the said floats, the said rollers and floats being retained in the groove or recess by a ring attached to or forming part of the rim of a wheel, and having formed on its inner surface a groove or recess to inversely correspond with the groove or recess in the annular frame, and on the outer surface of said ring a gear wheel, substantially as and for the purpose specified. 3rd. A ring attached to or forming part of the rim of a wheel, and having a groove formed on its inner surface, and a gear wheel extending around its outer surface, in combination with an annular frame extending around the said ring, and forming a shield to enclose its inner and outer surfaces, a groove or recess being formed around the periphery to correspond inversely with the groove or recess in the ring, and form a continuous annular chambe to receive a series of loose rollers and floats alternately arranged, substantially as and for the purpose specified. 4th. A pitman crank-shaft, one end of which is supported by a suitable bearing pivotally connected to the frame of the machine, its other end being adjustably supported by the said frame, and having secured to it a bevel pinion designed to engage with a bevel-wheel secured to a cross-shaft deriving motion from the wheels of the machine, in combination with a cam-lever arranged to swing the crank-shaft on its pivot, so as to throw its pinion in or out of gear with its driver, substantially as and for the purpose specified. 5th. A pivoted bracket designed lo support the inner or heel end of the cutter-bar, in combination with a pinion arranged to engage with a gear formed on the bra ket, and connected to a rod journalled in the frame of the machine, and provided with a handle by which the said rod may be caused to revolve, for the purpose of turning the bracket on its pivot and thereby fold the cutter-bar, substantially as and for the purpose specified. 6th. A bracket connected to the inner or heel end of a cutter-bar, and extending through a vertical slot formed in the frame of the machine, in combination with a rod arranged to connect the bracket to a lever pivoted on the frame of the machine, arranged substantially as and for the purpose specified. 7th. The bar B, arranged to connect the annular frames A, on which the cutter-bar F is centrally supported, in combination with the lever *u* pivoted on the tongue E and provided with a jaw X to engage with the bar B, substantially as and for the purpose specified. 8th. The cutter-bar F pivotally supported on the frame A, and having rigidly fixed to it the shoe N, in combination with the rods O and P, arranged substantially as and for the purpose specified.

No. 28,123. Draining Machine for Lands, etc. (*Machine à dessécher les terrains, etc.*)

Alfio Le Blanc, New Orleans, La., U. S., 30th November, 1887; 5 years.

Claim.—A draining machine, consisting of a cylindrical drum, provided with trunnions, one of which is hollow, secured to the heads of the drum, buckets having flaring ends secured to the heads of the drum, and a main body portion eccentric to the drum and secured along its inner edge to the drum periphery, and inclined troughs leading to the hollow trunnion and secured at opposite ends to the inner surface of the drum heads, substantially as set forth.

No. 28,124. Bedstead. (*Bois de lit.*)

Alfred N. Fairman, Montreal, Que., 30th November, 1887: 5 years.

Claim.—1st. In a bedstead, the combination of the wooden side rails, elbows E carrying ends of same, provided with dovetails interlocking with shoulder posts, and having turned down ends *e*, *e*, and inserted trusses under the side rails with the ends of the rods secured to *e*, *e*, all as herein described and for the purposes set forth. 2nd. In a bedstead, the combination, with the side rails, of a wire mattress, posts and connections of same, of inserted trusses secured on the underside of such rails, all as and for the purposes described.

No. 28,125. Hygienic Housemaid's Dust and Self-Sifting Cinder Box. (*Boîte-crible hygiénique pour la poussière et les cendres.*)

Benjamin W. Dove and Henry M. Dove, Islington, Eng., 30th November, 1887; 5 years.

Claim.—1st. The spring lid shovel *a*, for use with the box. 2nd. The combination of self-closing lid *c*, sloping shoot, with wire-bottom shovel *d* to act as sifter, and movable receiver *e* under the same as receptacle for dust, as described and shown. 3rd. Combination of openings in the ends *f*, *g*, *h*, *i* and *n* forming enclosures for the reception of various articles used in the cleaning of grates, stoves and such like purposes, substantially as set forth.

No. 28,126. Semaphore Signal. (*Sémaphore.*)

Vibe Spicer and Jens Schreuder, Pittsburg, Penn., U. S., 30th November, 1887; 5 years.

Claim.—1st. The combination in a semaphore signal, of a hollow box-like swinging arm blade, a stationary lamp fixed outside of the blade, and deflectors arranged substantially as described, so as to project the light from said lamp within the hollow of the blade, as set forth. 2nd. In a semaphore signal, the combination, with a stationary lamp or lantern adapted to project its light through the flanged opening, of a hollow or box-like swinging arm or blade having a transparent face, and containing the direct and indirect reflectors, said blade being mounted upon a horizontal shaft or pivot in line with the lamp burner, and formed with a tubular extension or flange, which coincides with the flanged opening of the lamp. 3rd. In a semaphore signal, the combination, with the hollow box-like swinging arm or blade C, having a transparent front angularly arranged, reflectors I, I1, a tubular rearwardly-extending portion E, and transparent partition or lens *k* with stationary lamp or lantern F, substantially as described. 4th. The combination, in a semaphore signal, of two hollow box-like swinging arms or blades, having their pivotal points in alignment, a lamp or lantern also in alignment with said pivotal points, and suitable reflectors arranged, substantially as described, whereby the light from said lantern is projected into both said blades, as set forth.

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

1002. W. MORRISON, 2nd 5 years of No. 15,719, from the 2nd day of November, 1887. Improvements on Hydraulic Dredging Machines, 2nd November, 1887.

1003. P. JOEL and GENERAL ELECTRIC LIGHT CO. (assignees) 2nd 5 years of No. 15,774, from the 11th day of November, 1887. Improvements on Electric Lamps, 2nd November, 1887.

1004. W. H. ESSERY, 2nd 5 years of No. 15,738, from the 6th day of November, 1887. Improvements on Wood Working Machinery, 3rd November, 1887.

1005. C. GORDON, 2nd 5 years of No. 15,750, from the 6th day of November, 1887. Improvements on Machines for Cooling and Drawing Beer, Ale, etc., 3rd November, 1887.

1006. J. A. CHISHOLM, 2nd 5 years of No. 15,837, from the 22nd day of November, 1887. Improvements in Machines for Barbing Wire, 10th November, 1887.

1007. A.G. BARTON and J. H. HALM, 2nd 5 years of No. 15,795, from the 17th day of November, 1887. Improvements in Hay Racks, 16th November, 1887.

1008. DAVID SERVIS, 2nd and 3rd 5 years of No. 15,840, from the 22nd day of November, 1887. Improvements on Wear Plates for Railway Ties, 16th November, 1887.

1009. J. P. COULTER and T. HIBBERT, 2nd 5 years of No. 15,834, from the 22nd day of November, 1887. Improvements on Draft and Ruffling Mechanism for Railroads, 16th November, 1887.

1010. P. PATTERSON and A. A. PATTERSON, 3rd 5 years of No. 8,286, from the 26th day of Decem'er, 1887. Improvements on Harrows, 16th November, 1887.

1011. W. H. H. DAVIS, 2nd 5 years of No. 15,855, from the 23rd day of November, 1887. Improvement in Devices for Digging Wells and Lining them with Cement, 21st day November, 1887.

1012. I. FRECHETTE, 2nd 5 years of No. 15,856, from the 23rd day of November, 1887. Improvements in Machines for Making Shingles, 21st November, 1887.

1013. J. S. FELT, 2nd 5 years of No. 15,863, from the 27th day of November, 1887. Improvements on Ploughs, 21st November, 1887.

1014. H. ROBERTS, 2nd 5 years of No. 15,903, from the 5th day of December, 1887. Improvements on Means for Finishing Zinc Coated Wire, 21st November, 1887.

1015. F. X. DESTRAMPES, 3rd 5 years of No. 8,451, from the 23rd day of January, 1887, Ointment for External Bruises, 29th November, 1887.

1016. J. A. WRIGHT, 2nd 5 years of No. 15,901, from the 5th day of December, 1887. Improvements on Impervious Packages for Oils, Varnish, Benzine, etc., etc., 25th November, 1887.

THE

CANADIAN PATENT OFFICE RECORD.

ILLUSTRATIONS.

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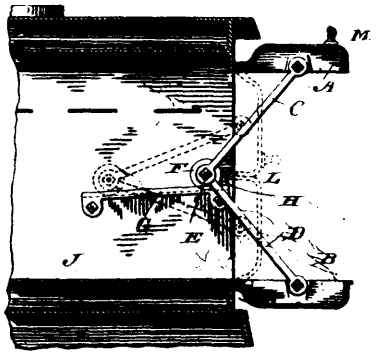
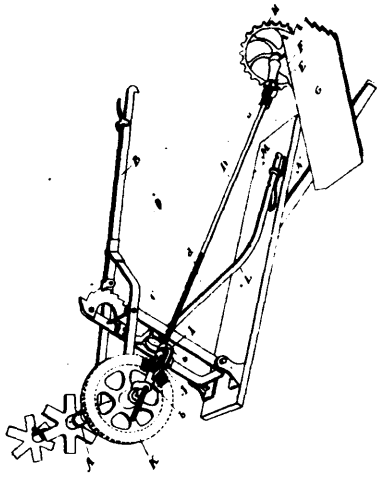
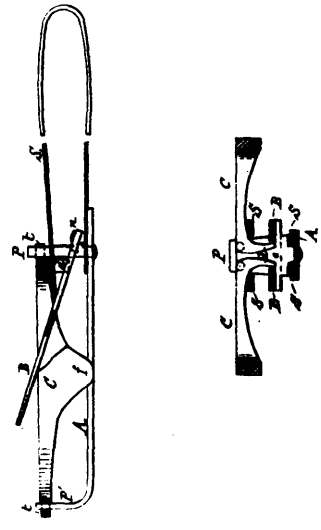


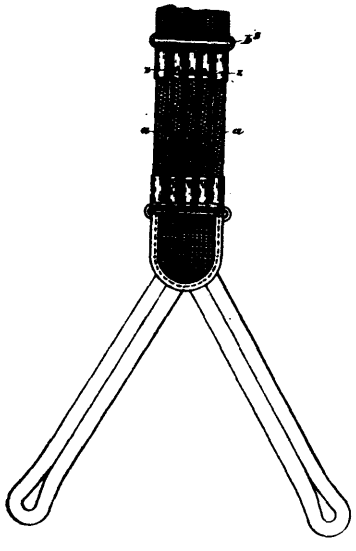
27902 Baxter's Stove Door.



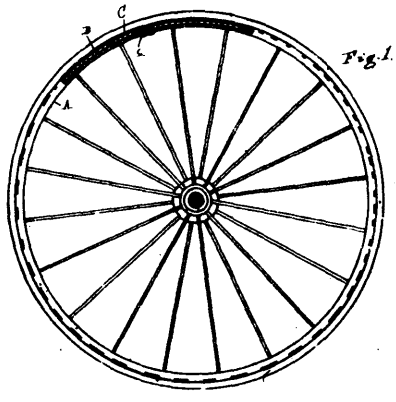
27903 Johnson's Mechanism for Harvesters.



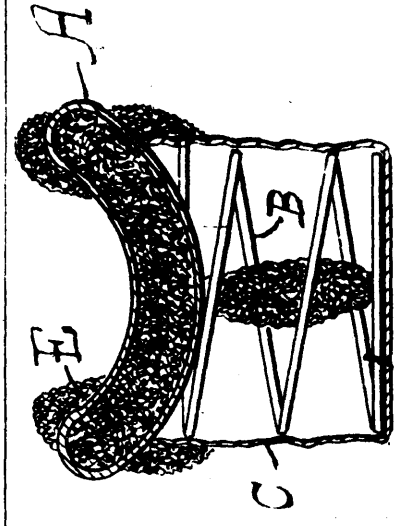
27904 Seymour's Animal Trap.



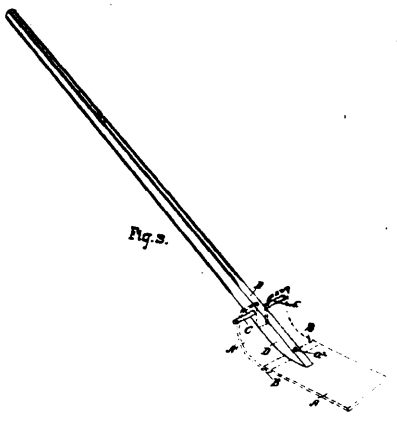
27905 Potter's Adjustable Strap.



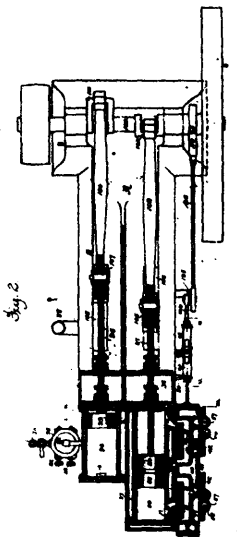
27906 Harris' Vehicle Wheel Tire.



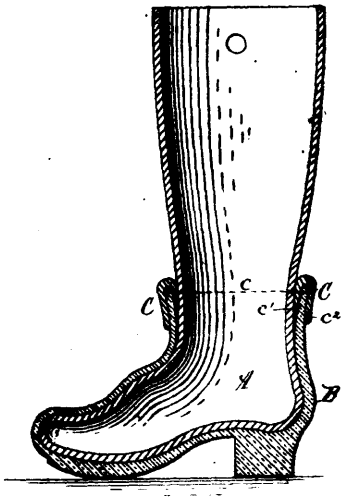
27907 Flynt's Car Axle Lubricator.



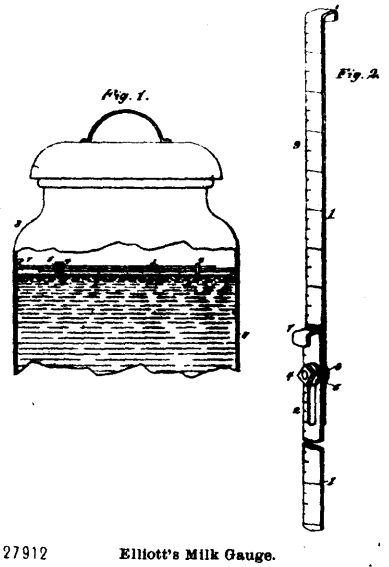
27908 Magee's Snow Shovel.



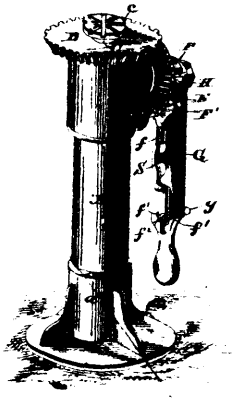
27909 Murray's Gas Engine.



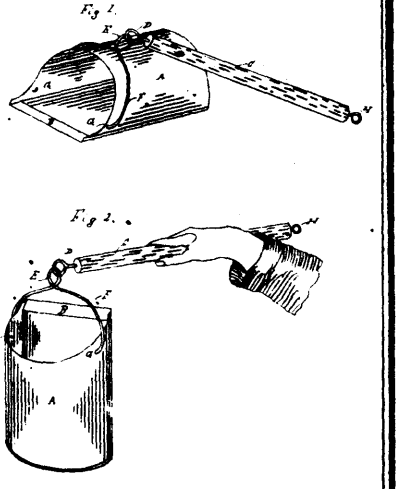
27911 Taber's Felt Boot.



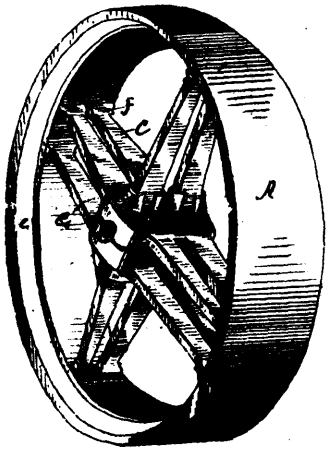
27912 Elliott's Milk Gauge.



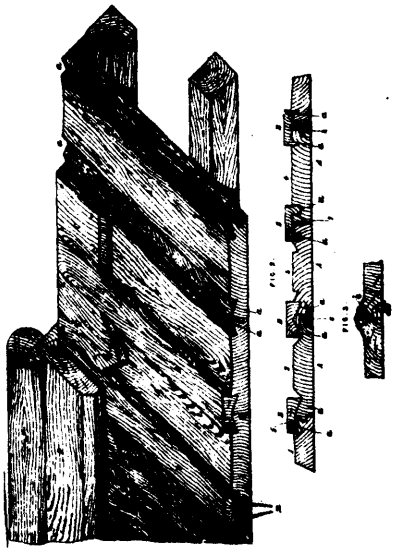
27913 Hopkins & Knight's Jack Screw.



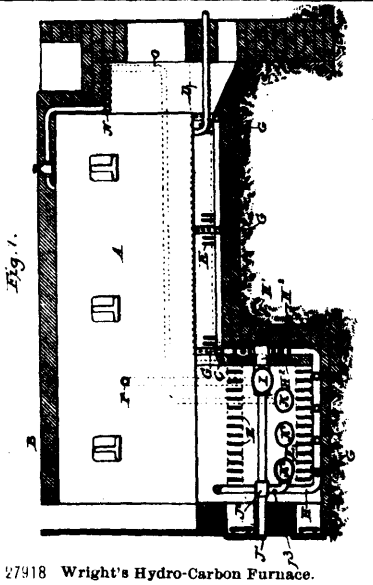
27914 Sampson's Dust Pan.



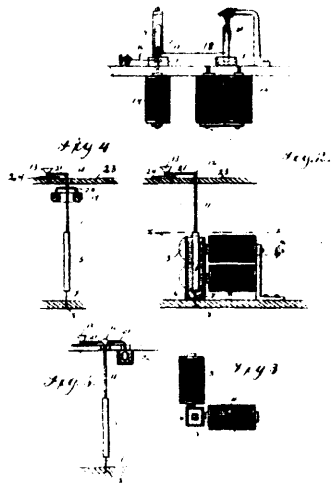
27916 McNeal's Wooden Pulley.



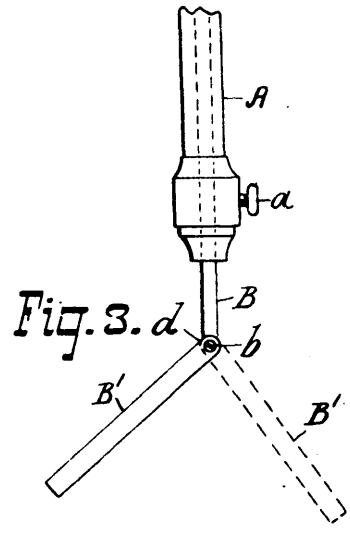
27917 Little's Timber Roof.



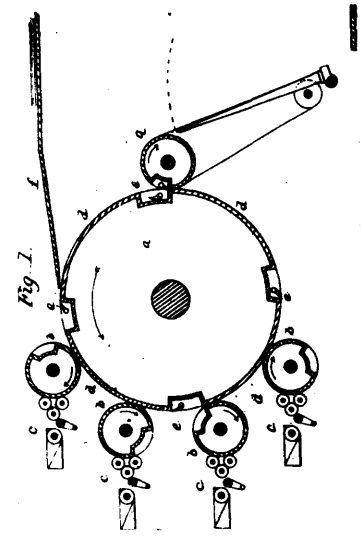
27918 Wright's Hydro-Carbon Furnace.



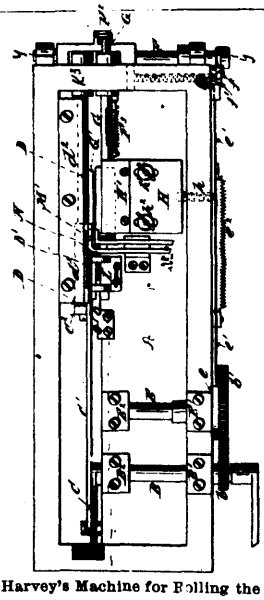
27919 Robertson's Autographic Telegraph.



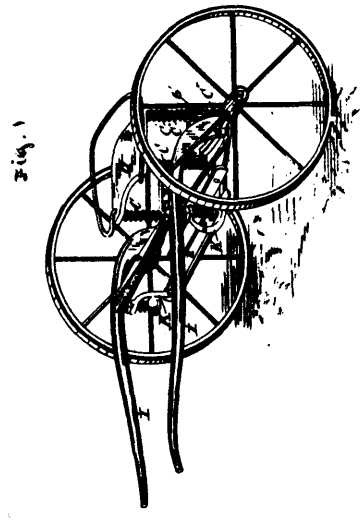
27920 Stewart's Stove Pipe Hanger and Fastener.



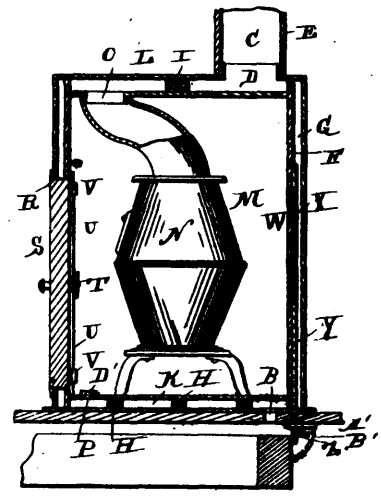
27921 Clarke & Wendté's Chromatic Printing Machine.



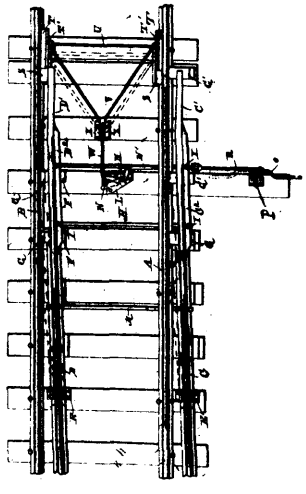
27922 Harvey's Machine for Rolling the Threads of Screws.



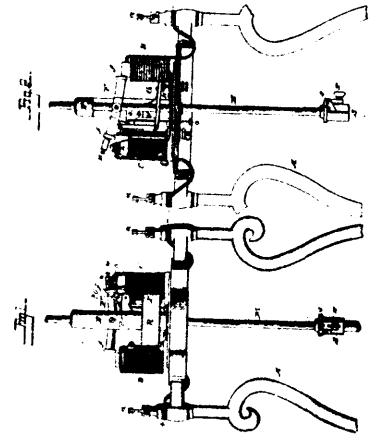
27923 Bew's Two-Wheeled Vehicle.



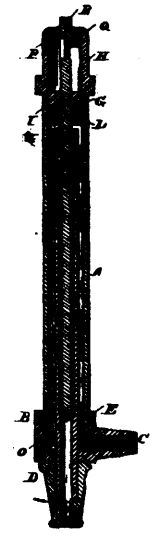
27924 Dennis' Safety Car Heater.



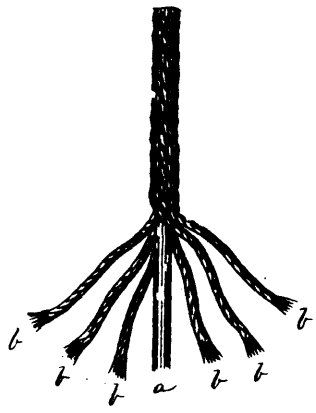
27925 Lutz's Snow-Cleaning Railway Switch.



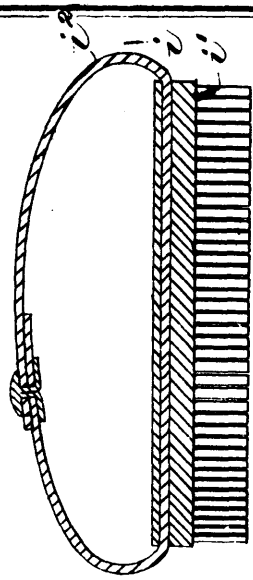
27926 Hill's Electric Lamp.



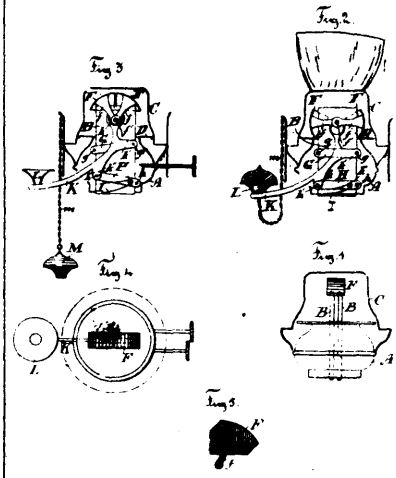
27927 McKeen's Steam Radiator Valve.



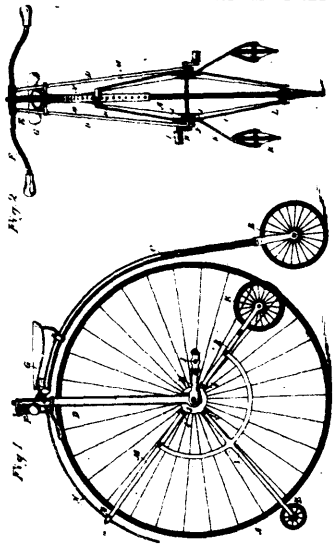
27928 Haskell's Twine.



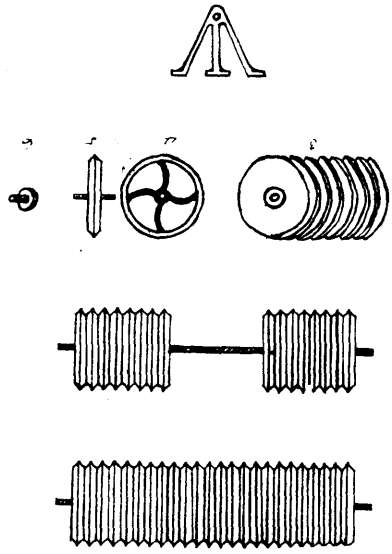
27929 Bailey's Bath Brush.



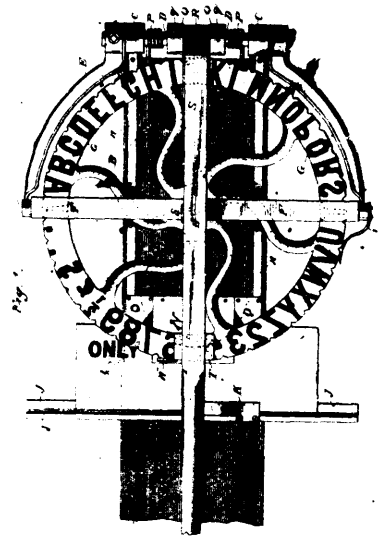
27930 Stratton's Car Lamp Extinguisher.



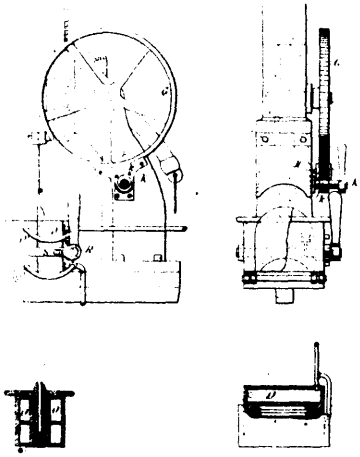
27931 Brusie's Bicycle.



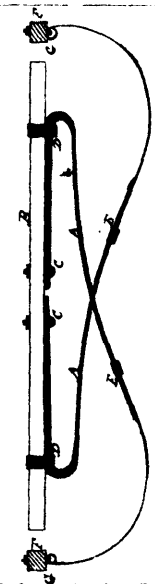
27932 Potter's Roller.



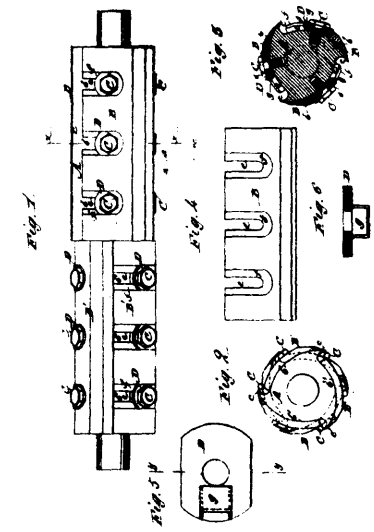
27933 Kidder & Carter's Card Printer.



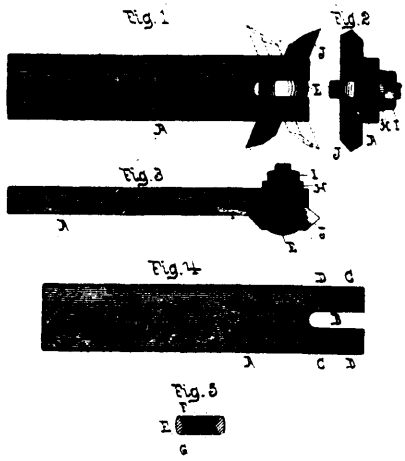
27934 Levian's Machine for Forming Dress Shields.



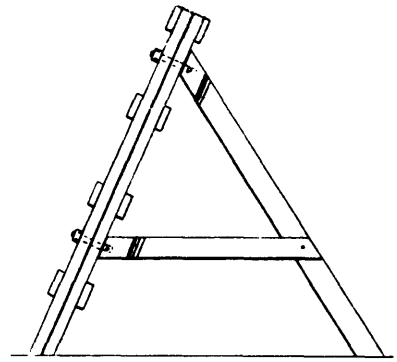
27935 McFarlane's Carriage Spring.



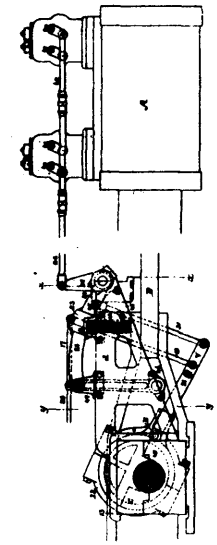
27936 Humphrey's Cutter Head.



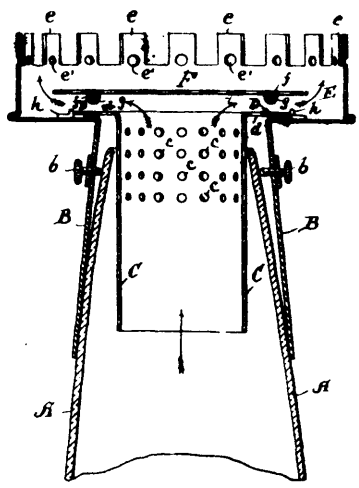
27937 Seymour's Machine Tool Holder.



27938 Sarvis' Fence.

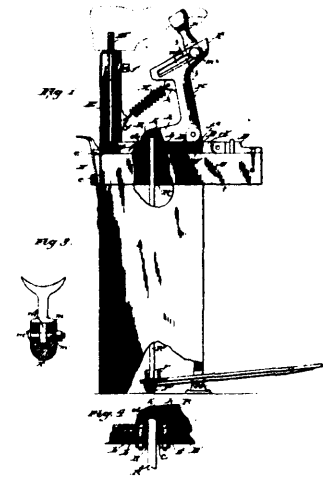


27940 Strong's Valve Gear for Steam Engines

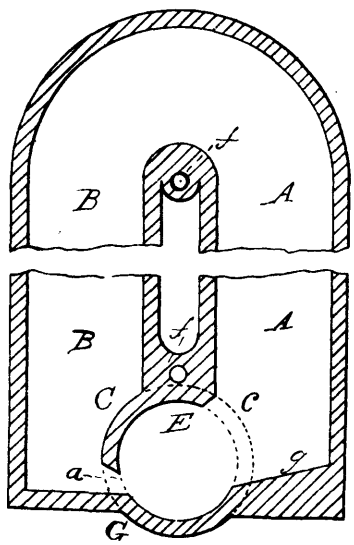


27941 Sargent's Heating Attachment for Lamp Chimneys.

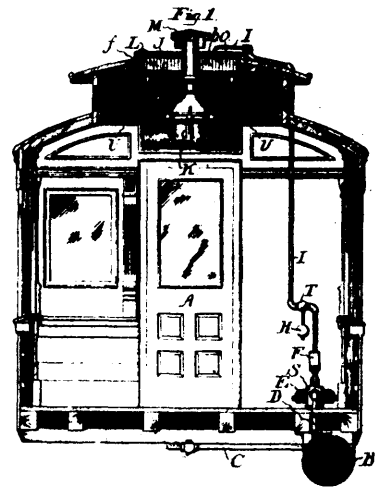
27942 Utter's Barbed Wire Fencing.



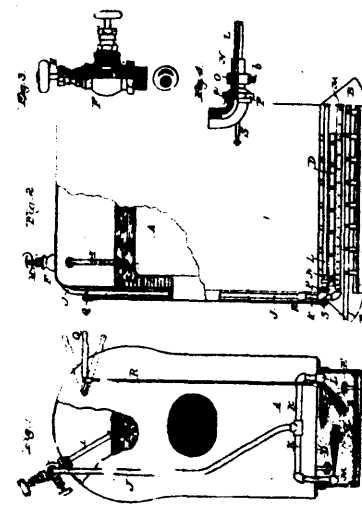
27943 Dorwart's Jack for Boots and Shoes.



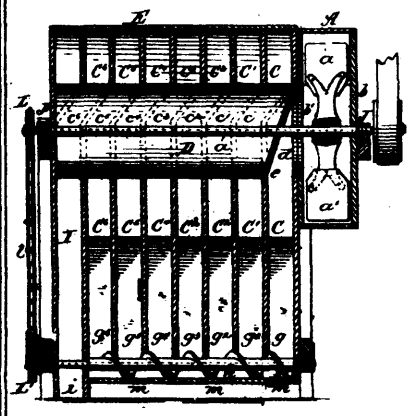
27944 Dixon's Syphon Steam Pipe Heater.



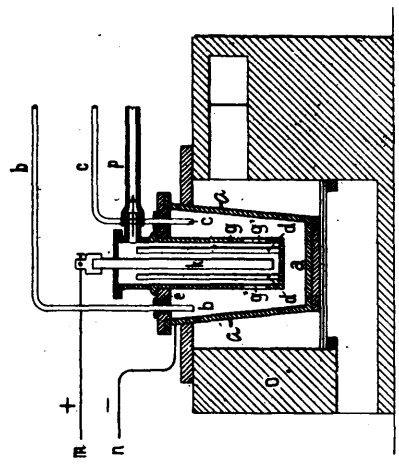
27945 Frost's Apparatus for Lighting Cars.



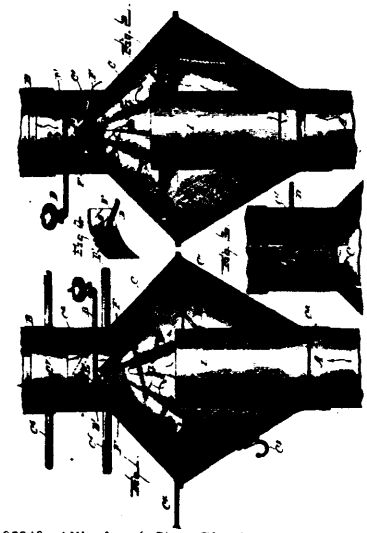
27946 Barber's Boiler Attachment.



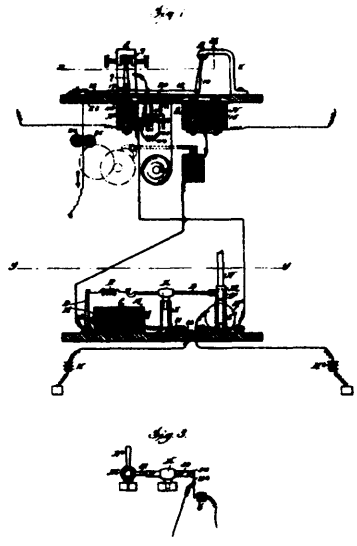
27947 Finch's Dust Collector.



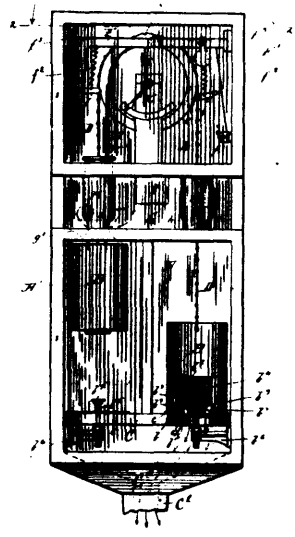
27948 Graetzel's Process of Producing Metals.



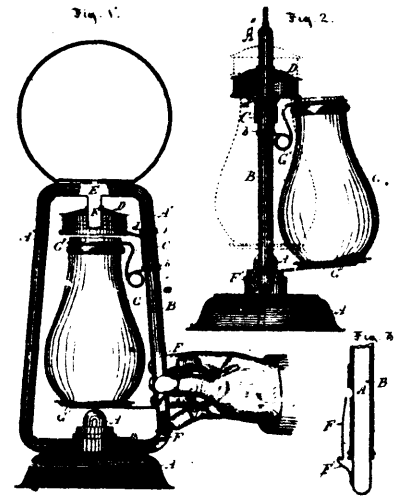
27949 Allingham's Stove Pipe Shelf and Draft Regulator.



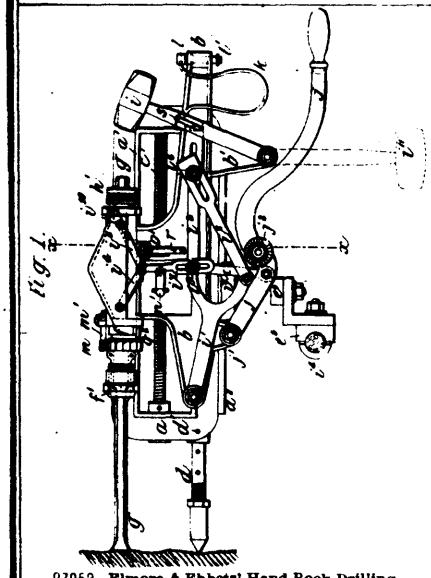
27950 Robertson's Autographic Telegraph.



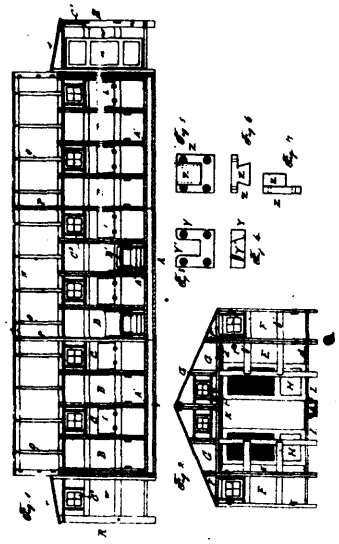
27951 Dominy's Grain Weighing Scales.



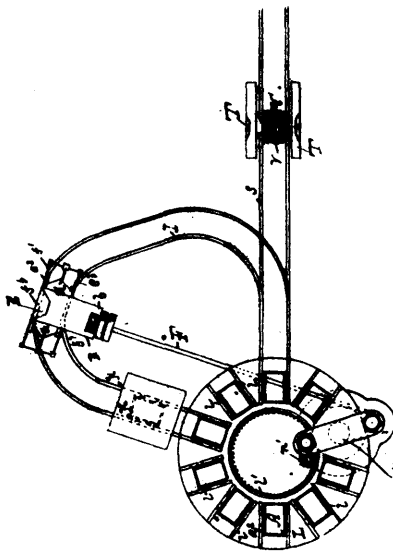
27952 Kennedy's Tubular Lantern.



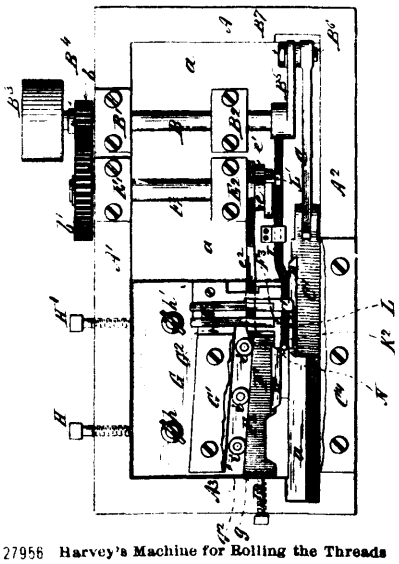
27953 Elmore & Ehbets' Hand Rock Drilling Machine.



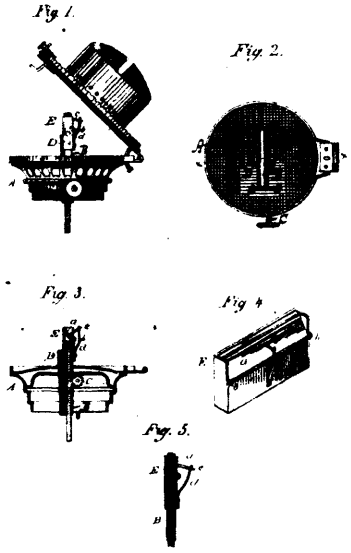
27954 Ducker's Portable House.



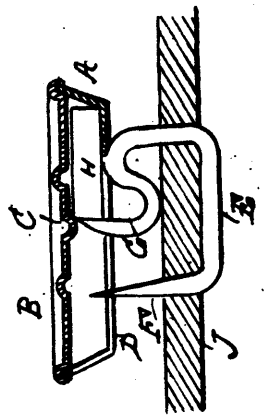
27955 Lister's Carbon Machine.



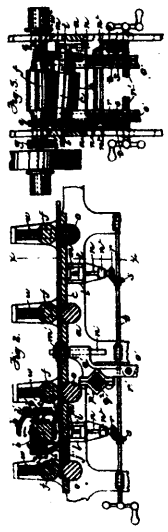
27956 Harvey's Machine for Rolling the Threads of Screws and Bolts.



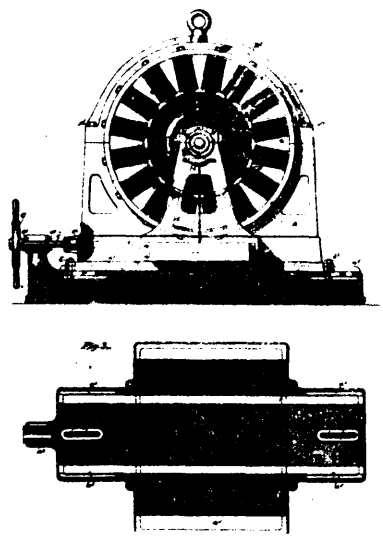
27957 Maish's Lamp Burner



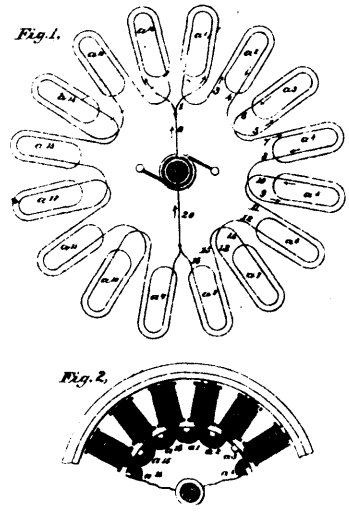
27958 Hall's Button Fastener.



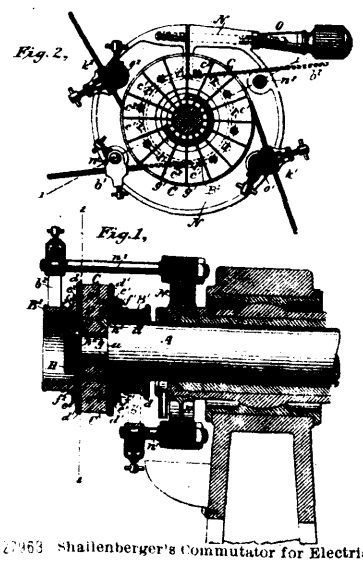
27960 Saucier's Planing Machine



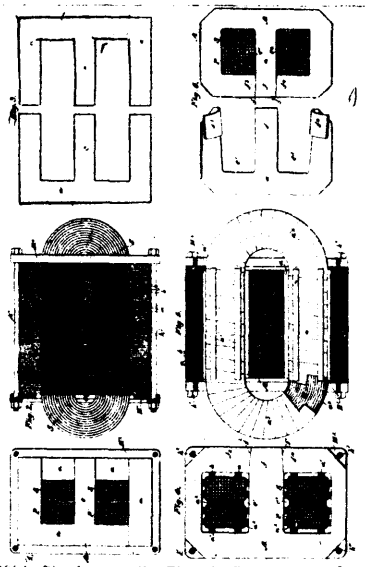
27961 Westinghouse et al's Dynamo-Electric Machine.



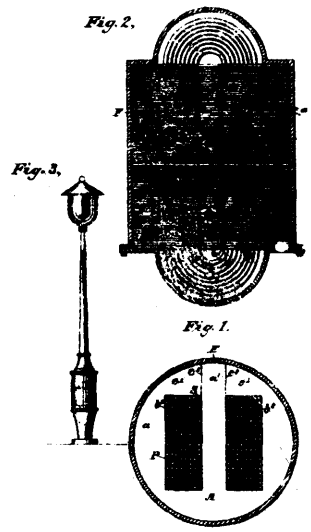
27962 Shallenberger's Armature for Electric Machines.



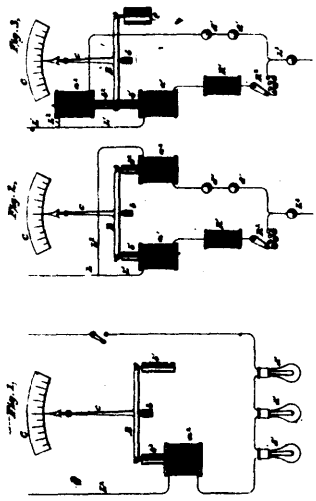
27963 Shallenberger's Commutator for Electric Machines.



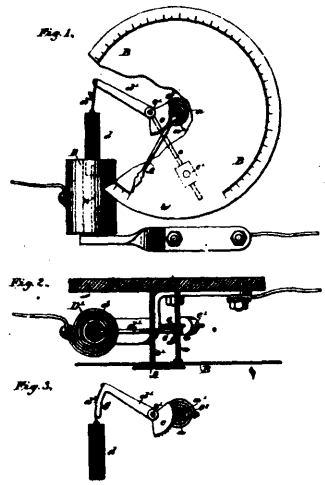
27964 Stanley et al's Electric Converter and Box.



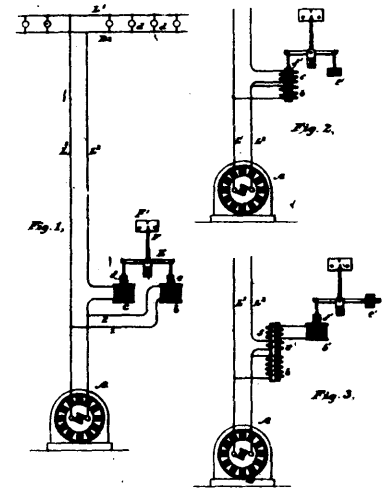
27965 Westinghouse's Box for Electric Converters.



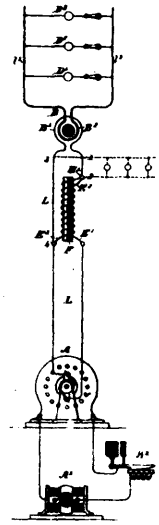
27966 Lange & Shallenberger's Volt-Meter.



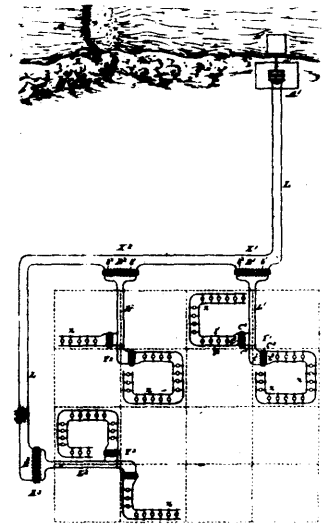
27967 Lange's Ammeter.



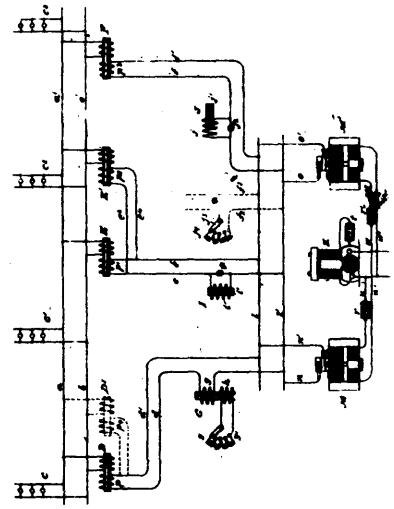
27968 Shallenberger's Electric Pressure Indicator.



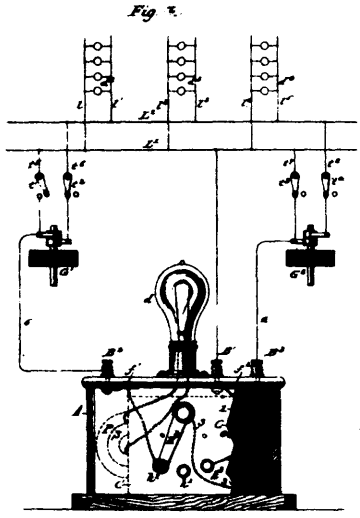
27969 Stanley's Regulating System for Electric Circuits.



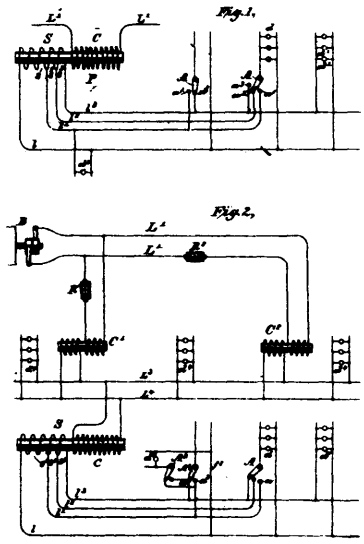
27970 Stanley's System of Electric Conversion.



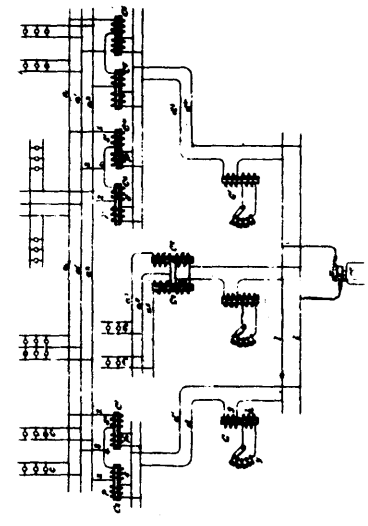
27971 Shallenberger's Electrical Distribution System.



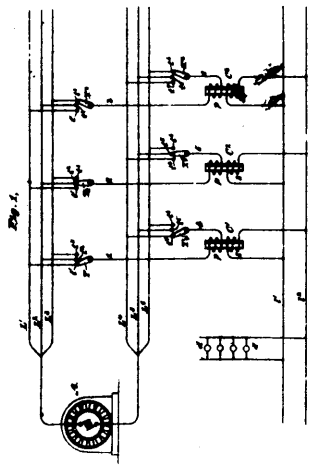
27972 Shallenberger's Electric Generator.



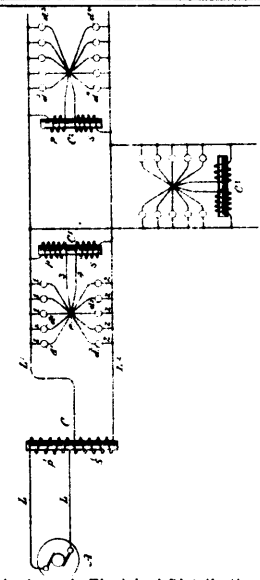
27973 Shallenberger's Electrical Distribution, &c.



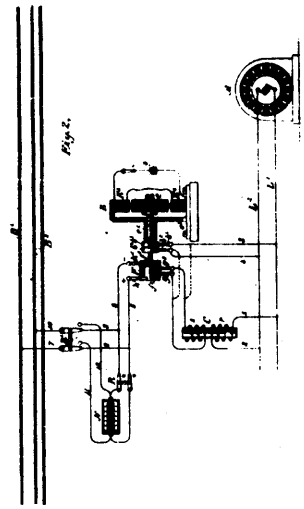
27974 Shallenberger's Electrical Distribution, &c.



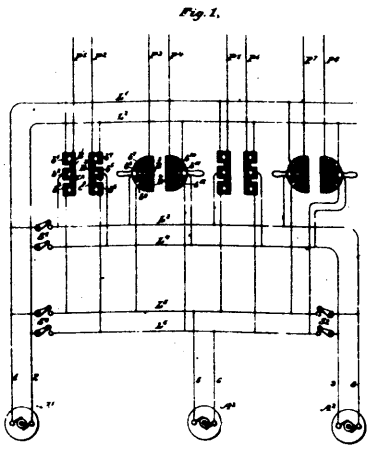
27975 Westinghouse's Electric Circuit and Automatic Controlling Apparatus



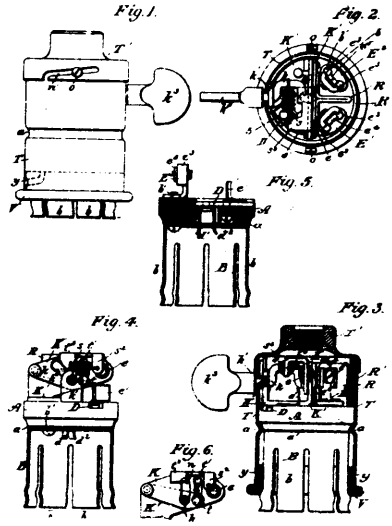
27976 Westinghouse's Electrical Distribution System.



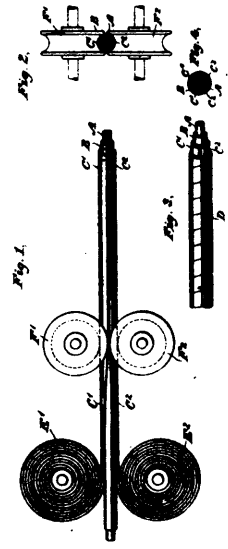
27977 Westinghouse's System of Electrical Distribution.



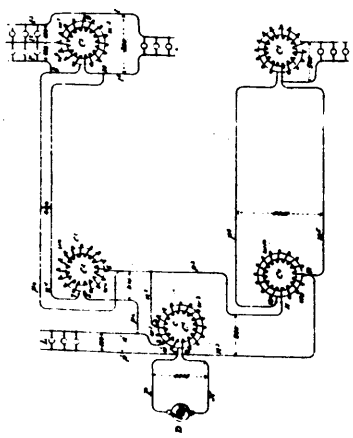
27978 Shallenberger's Electrical Circuit Controlling Apparatus



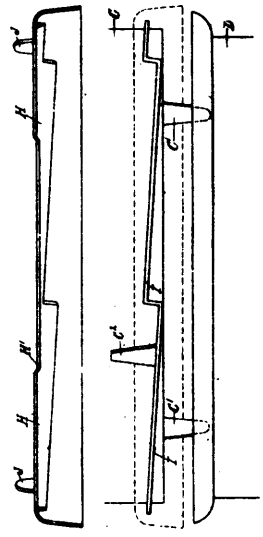
27979 Pope et al's Incandescent Electric Lamp Socket.



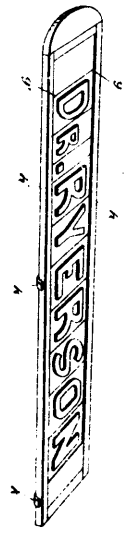
27980 Westinghouse's Electric Conductor.



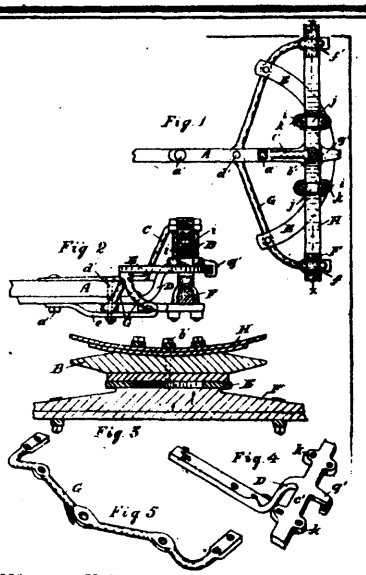
27981 Stanley's Electrical Distribution.



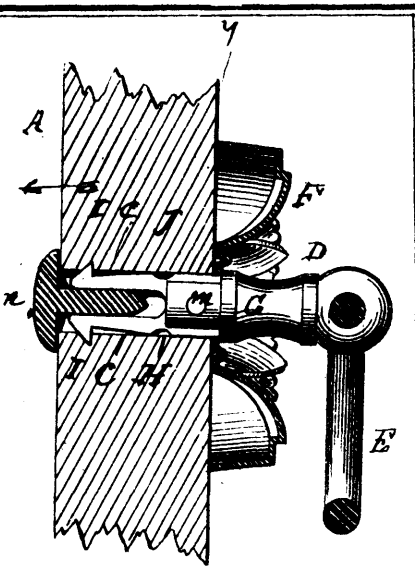
27983 Herrick's Soft Coal Burner.



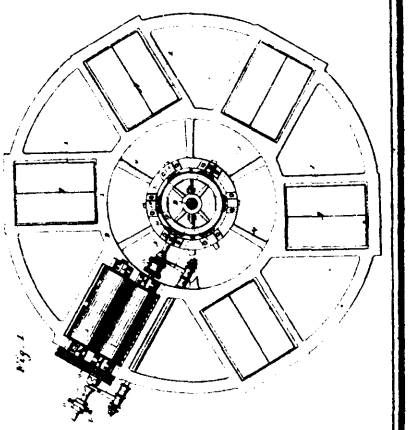
27985 Springer's Metal Door Plate.



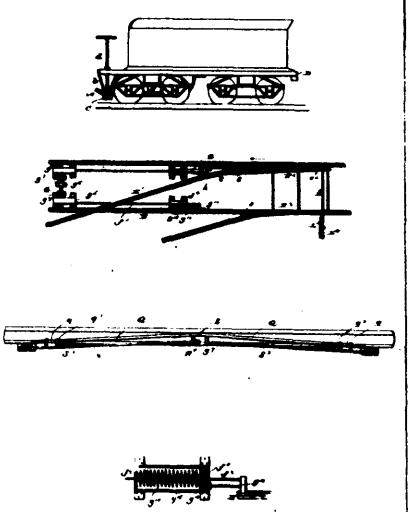
27986 McKercher's Carriage Gear



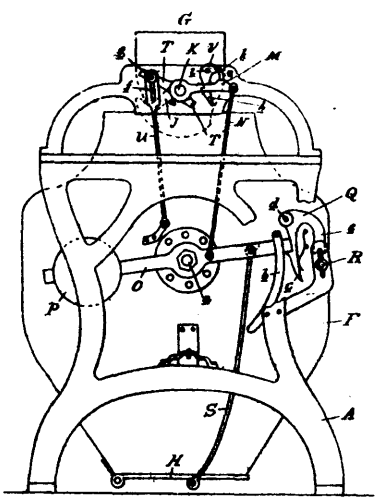
27987 Chilton's Drawer Pull



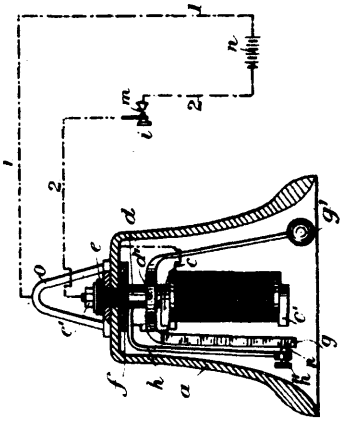
27988 Cochrane's Gearing.



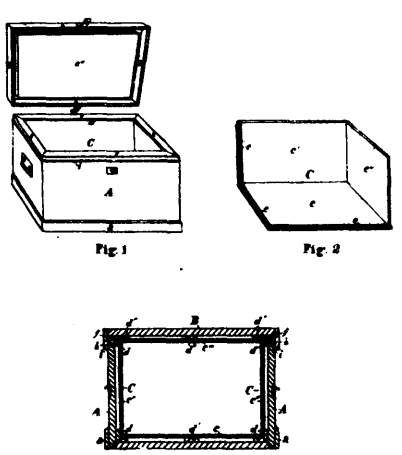
27989 Hahn's Railway Switch.



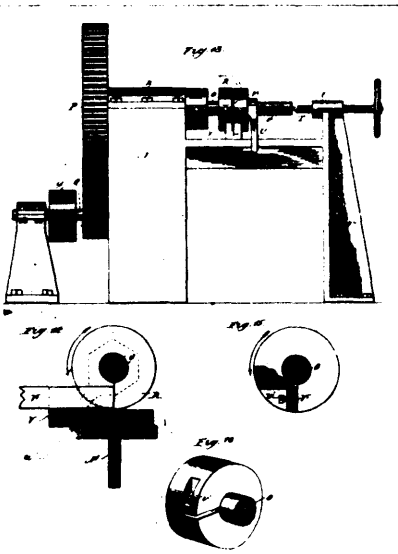
27990 Dutton's Flour Scales



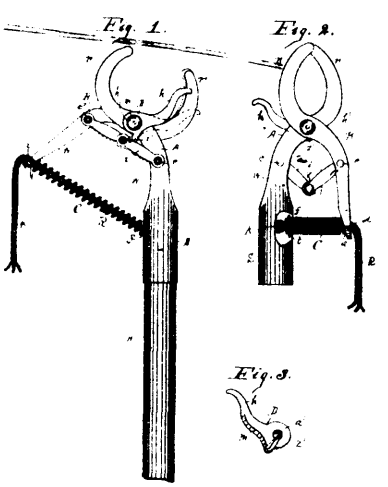
27991 Jensen & Webb's Electric Bell.



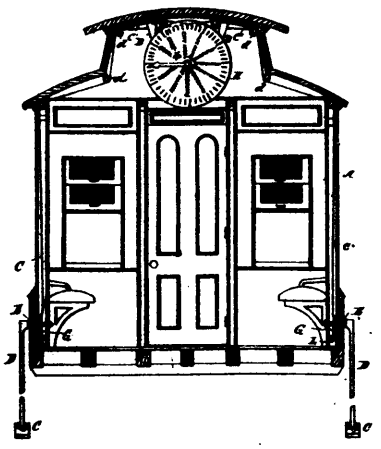
27992 Pullen's Box for Transporting Butter



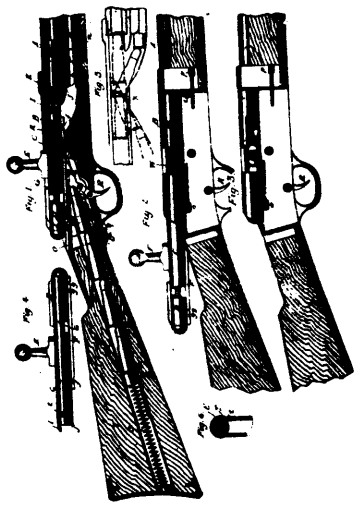
27993 Greene's Machinery for Making Spiral Conveyers.



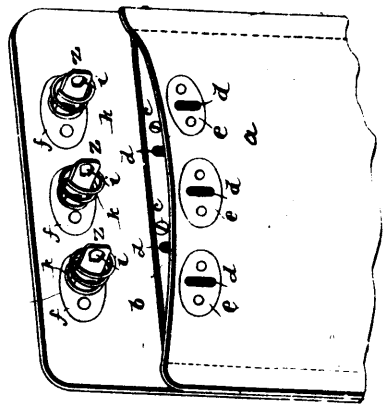
27994 Chappell's Animal Trap.



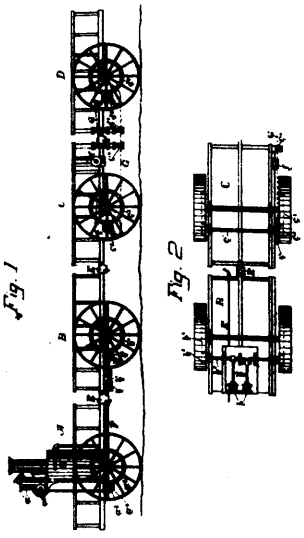
27995 Senftner's Station Indicator.



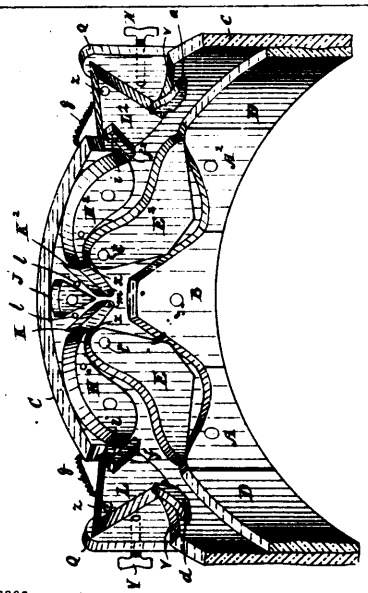
27996 Weatherby's Magazine Fire Arm.



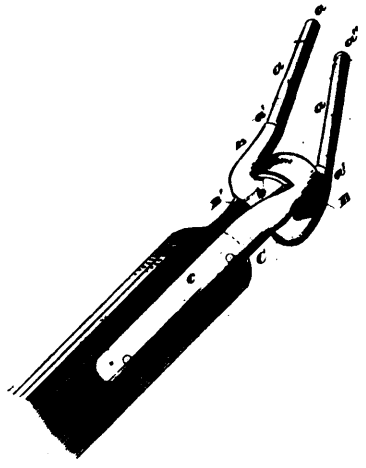
27997 Milliken's Bag Lock.



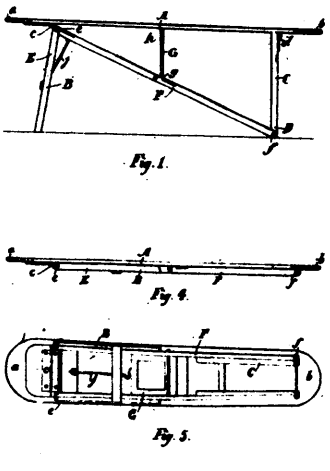
27998 Osborne's Self-Propelling Waggon Train.



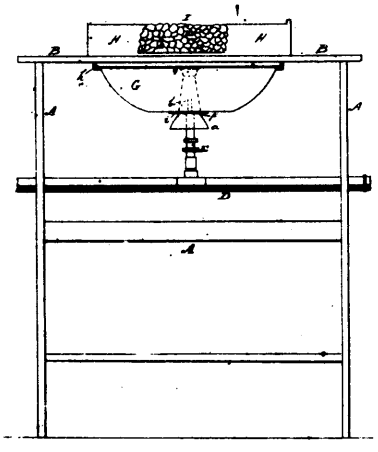
27999 Kelly's Knitting Machine



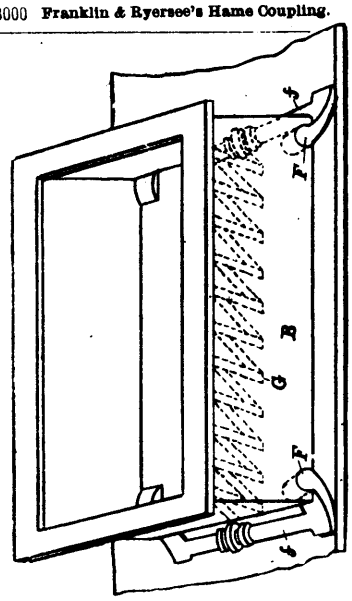
28000 Franklin & Ryersee's Hame Coupling.



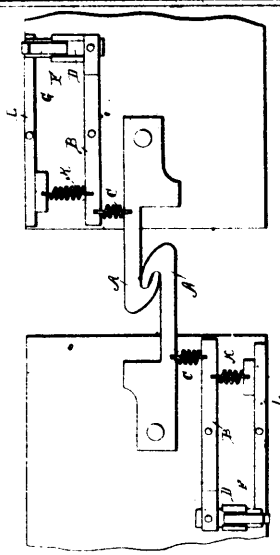
28001 Desève's Ironing Board.



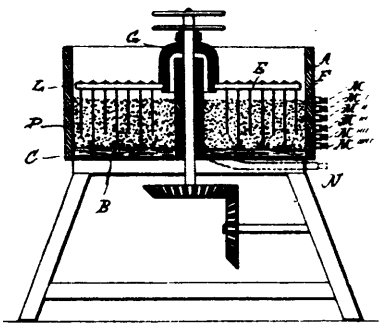
28002 Smith & Boyd's Gas Stove.



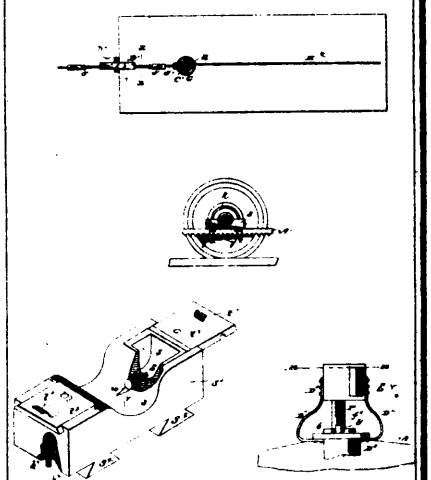
28003 MacMahon's Lubricator.



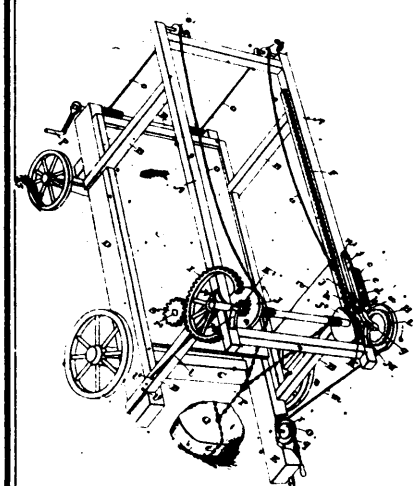
28004 **Whittington & Stovall's Car Coupling.**



28005 **Birmingham's Process of Separating Metals from their Ores.**



28006 **Hahn's Car Brake.**



28007 **Wallace's Machine for Removing Stone.**

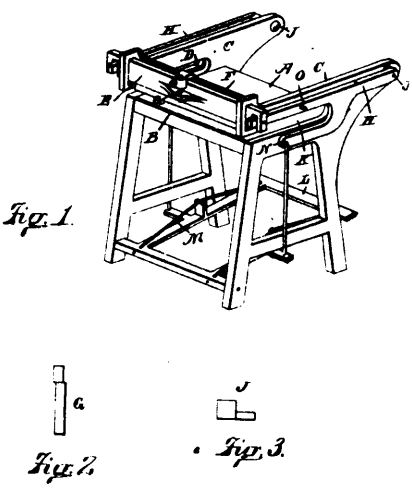
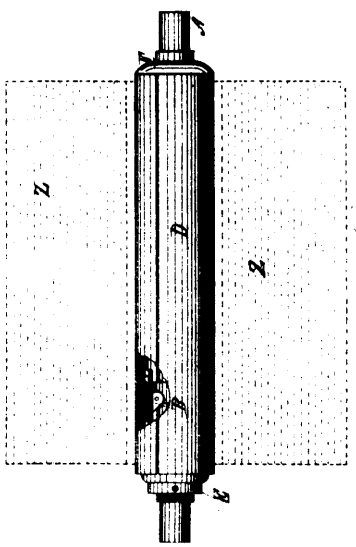


Fig. 1.

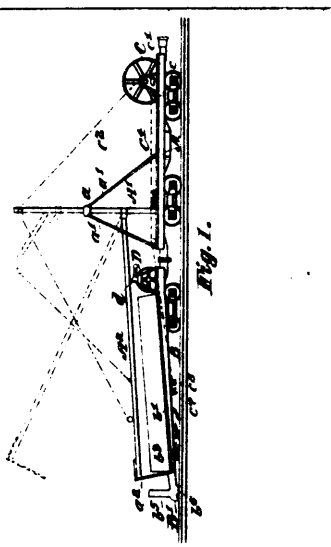
Fig. 2.

Fig. 3.

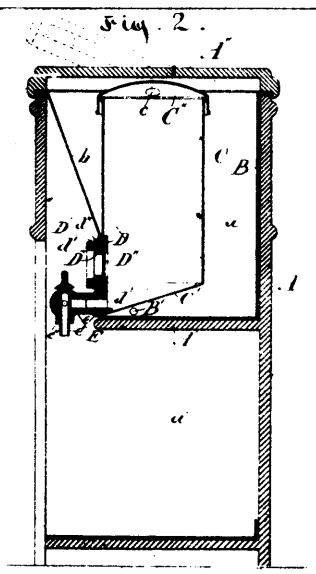
28008 **Bertsch's Metal Shearing Machine.**



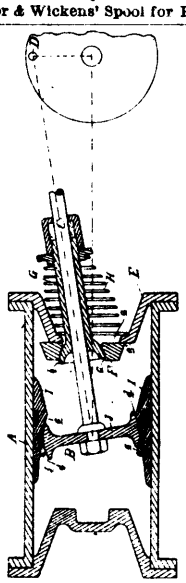
28009 **Taylor & Wickens' Spool for Paper Rolls.**



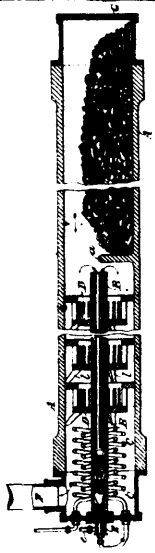
28010 **Nichols' Snow Excavator.**



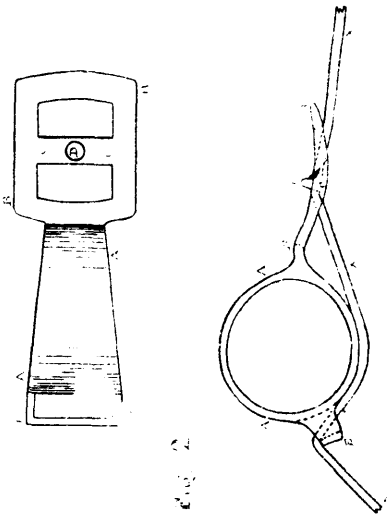
28011 **Pulfer's Creamer.**



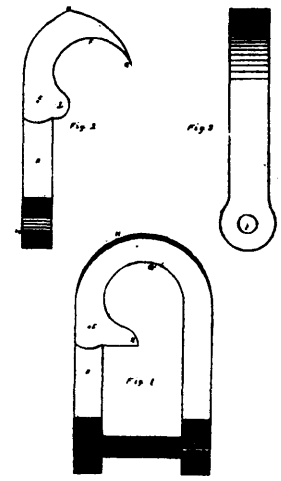
28012 **Jarvis' Steam Engine.**



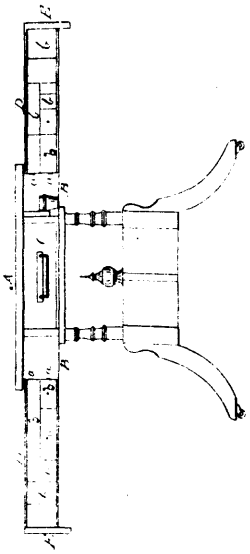
28013 Meeze's Manufacture of Gas.



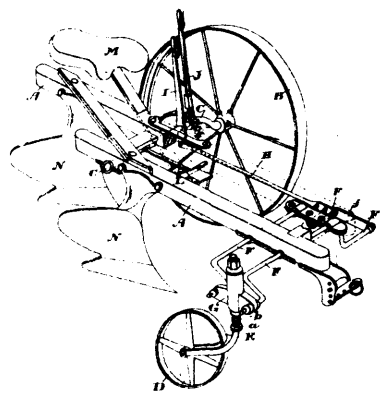
28014 Foster's Vehicle Shaft Support.



28015 Rooney's Clevis

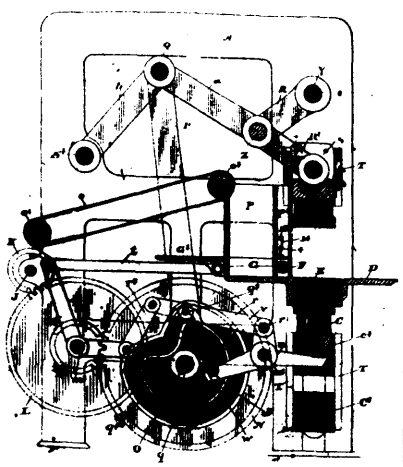


28017 Harrison's Combination Table

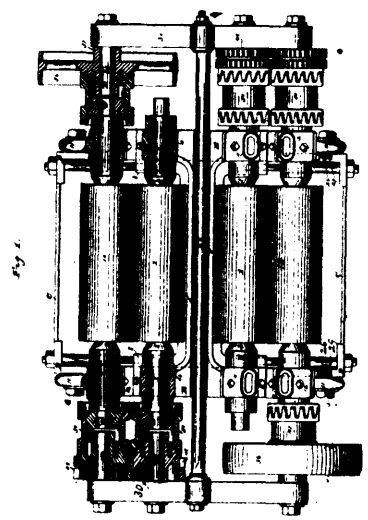


28018 Button's Sulky Plough

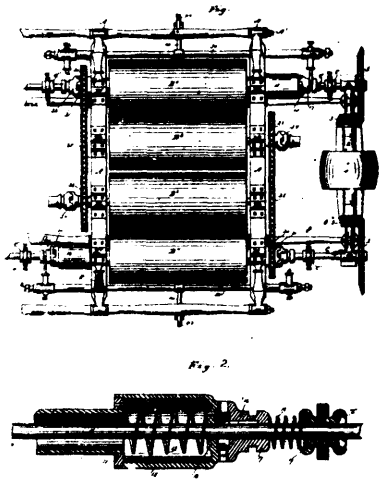
28019 Massey's Railway Brake.



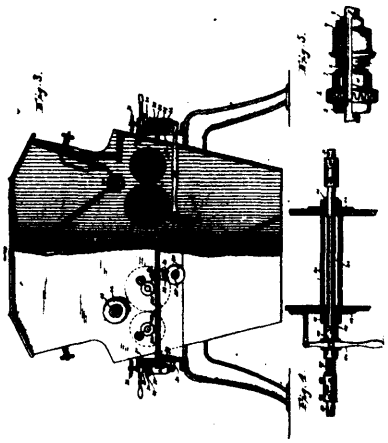
28020 Smith's Pressed Brick Making Machine.



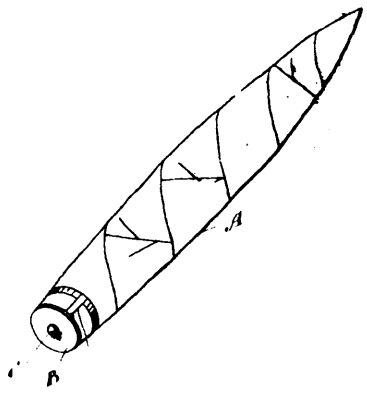
28022 Cochrane's Roller Mill.



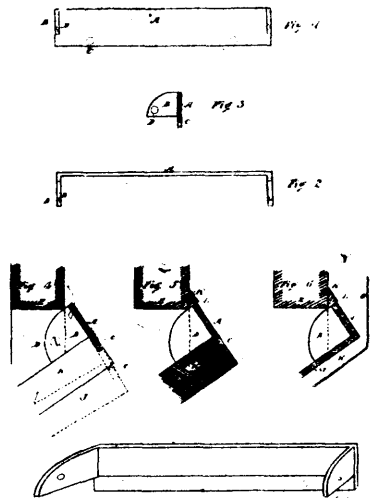
28023 Cochrane's Gearing.



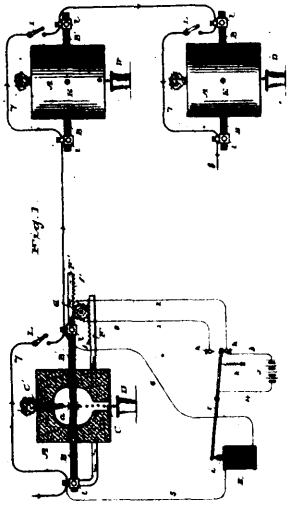
28024 Cochrane's Roller Mill.



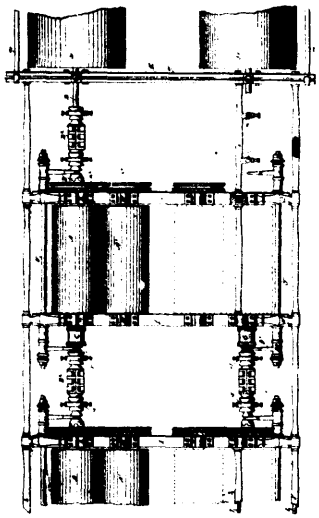
28025 Conover's Cigar Lighter.



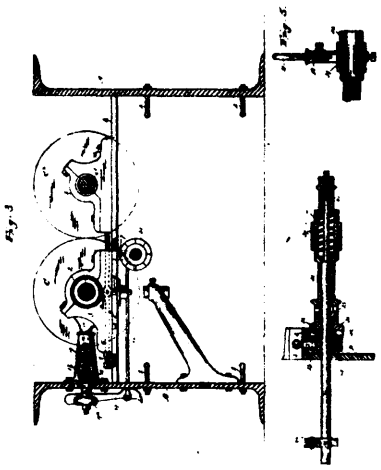
28026 Marcy's Attachment for Organs.



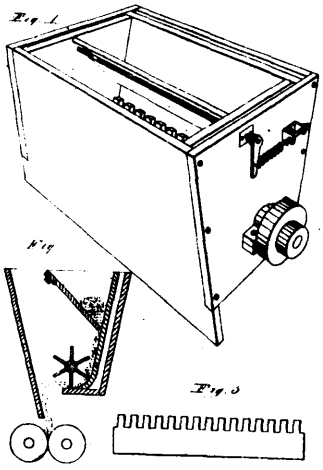
28027 Farmer's Apparatus for Procuring Aluminium.



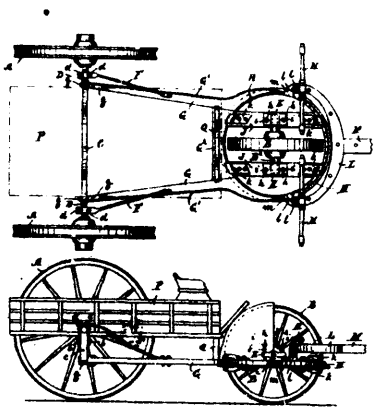
28028 Cochrane's Gearing and Relief Mechanism for Rolls.



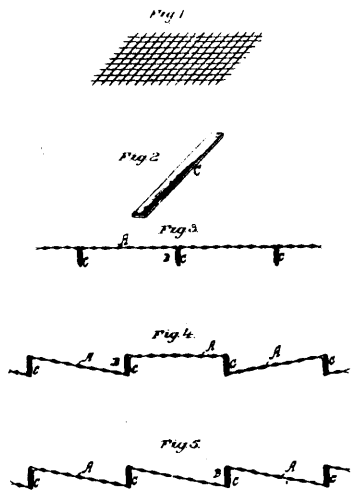
28029 Cochrane's Gearing and Relief Mechanism for Roller Mills.



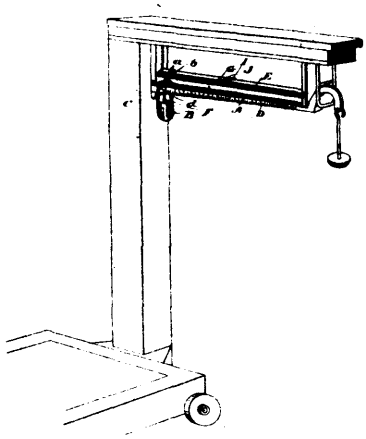
28030 Link's Feed Board and Distributor for Grist Mills.



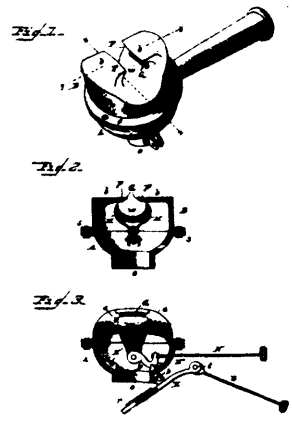
28031 Whelpley's Waggon.



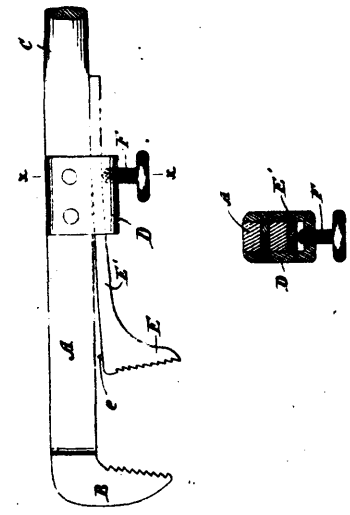
28032 Sackett's Wire Lathing



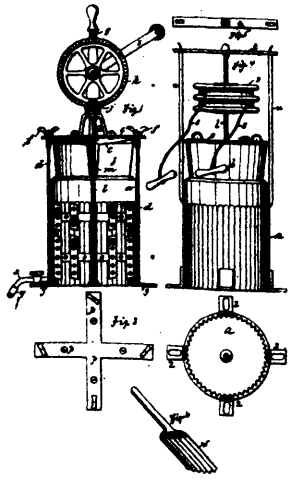
28033 Taylor's Weigh Scales.



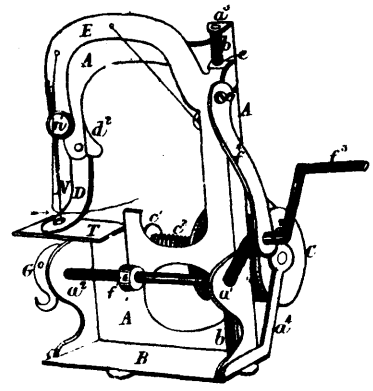
28034 Simon's Tuyeres.



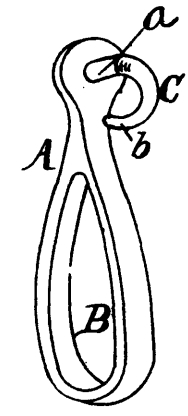
28036 Porter's Pipe Wrench.



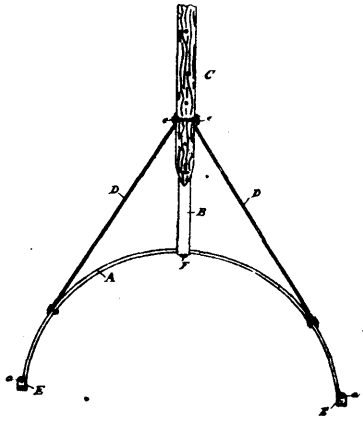
28037 Frank's Churn.



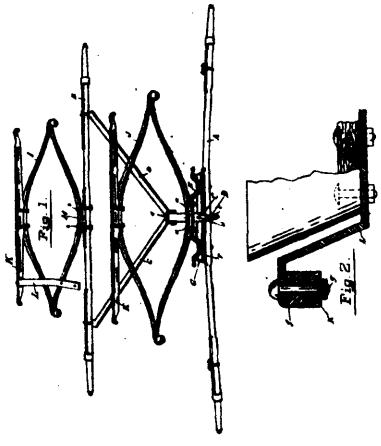
28038 Martin's Sewing Machine.



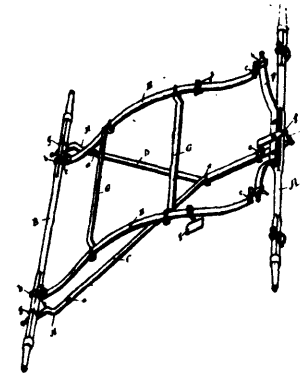
28039 Smith's Gag Runner for Harness.



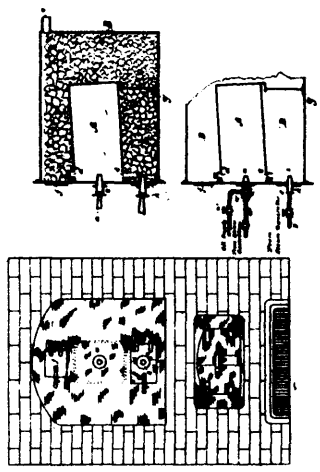
28040 Armstrong's Vehicle Pole.



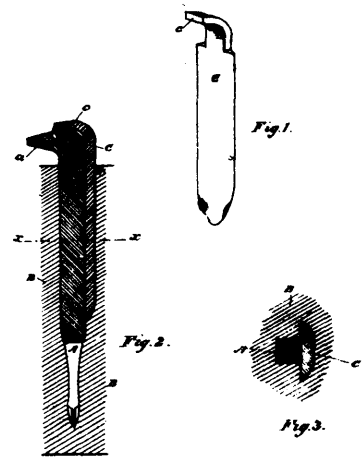
28041 Armstrong's Vehicle Elliptic Spring Gear.



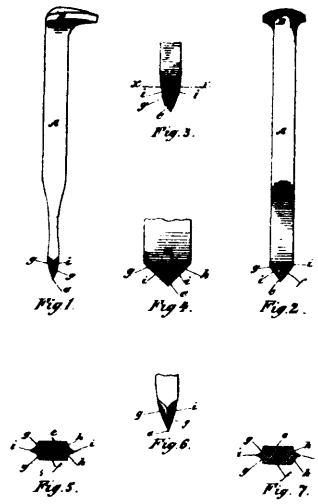
28042 Armstrong's Side Spring Buggy Gear.



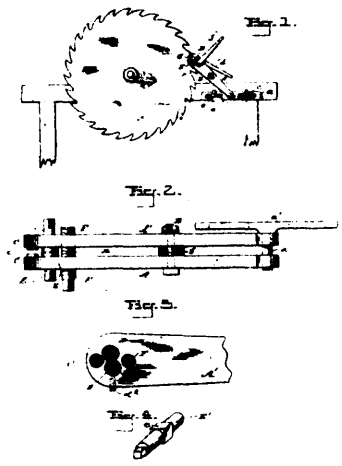
28043 Stillman's Apparatus for Manufacturing Gas.



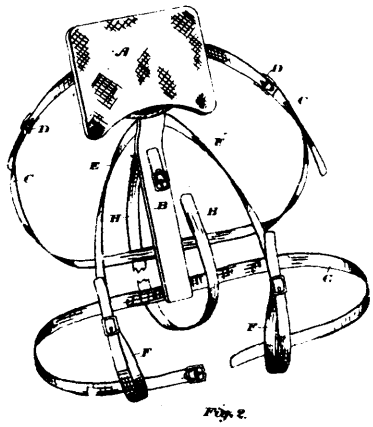
28044 McLean's Re-inforce for Spikes.



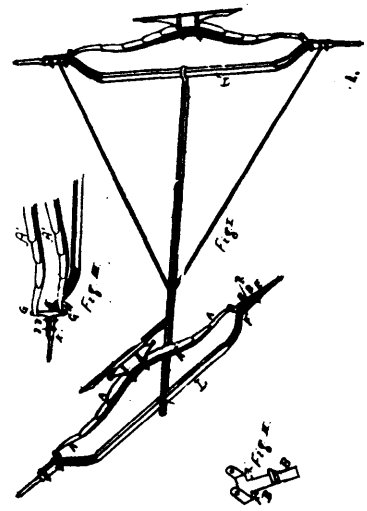
28045 McLean's Spike Point



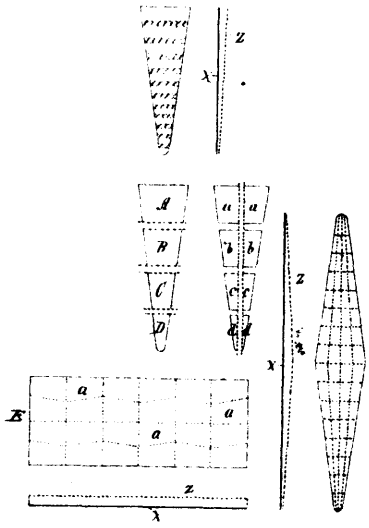
28046 Ward's Saw Swage.



28047 Campbell's Head Rest.

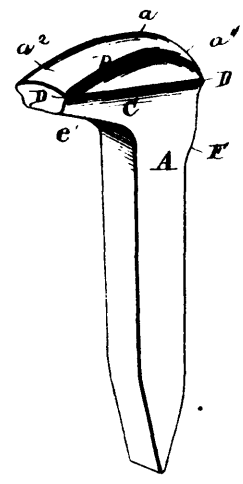


28048 McDougall's Vehicle Spring and Coupling.

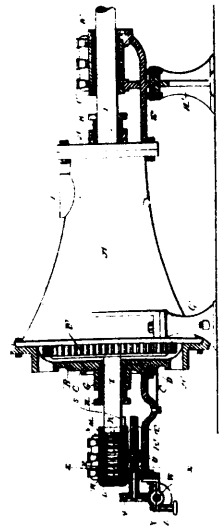


28049 Keller's Method of Cutting and Joining Racoon Tails.

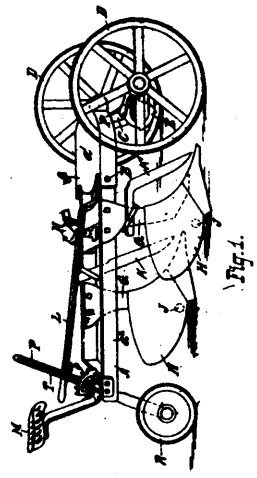
28050 Rosentreter's Sash Fastener.



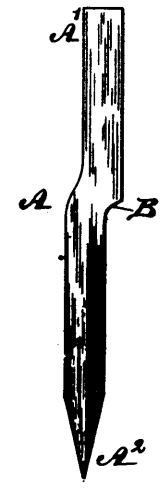
28051 Welsh's Spike.



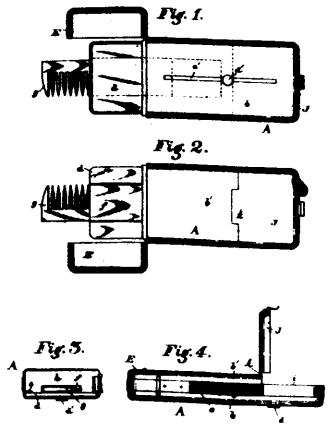
28052 Jeffers' Pulp Engine.



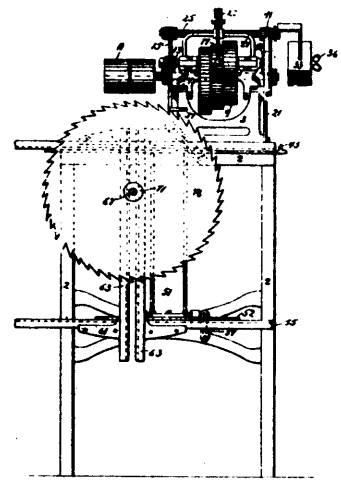
28054 Wilson's Double Furrow Plough.



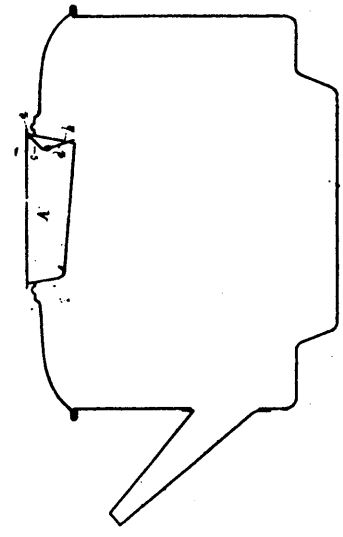
28055 Nulty's Spike.



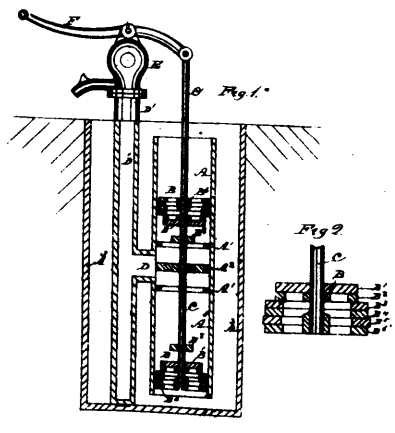
28056 Raffel's Pocket Case.



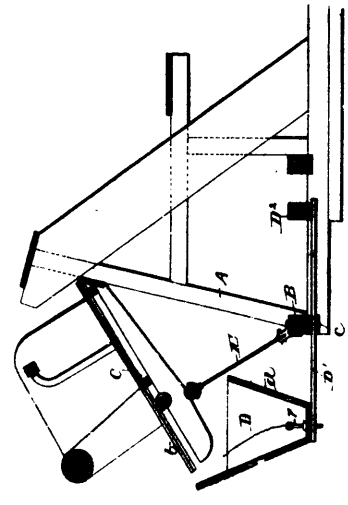
28057 Blackmer's Saw Sharpening Machine.



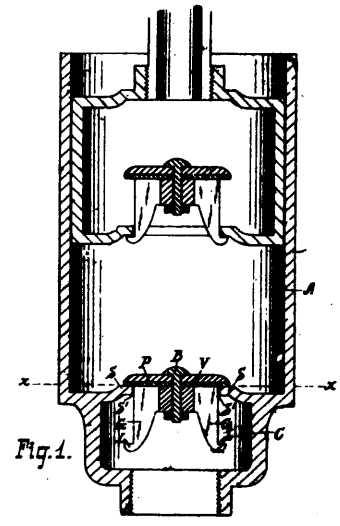
28058 Perry's Tea Kettle Cover.



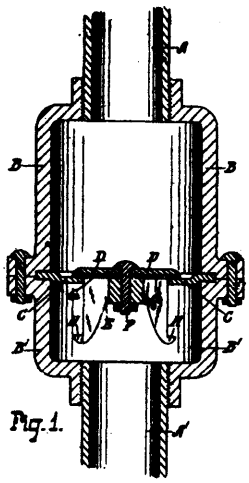
28059 Harrison's Pressure Pump.



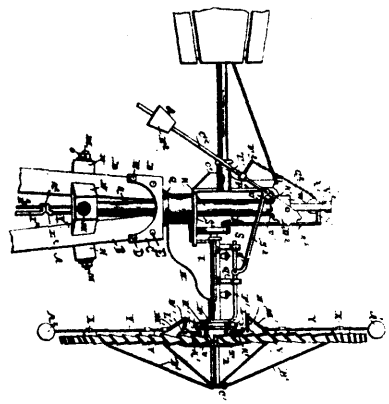
28060 Crandall's Grain Saving Device for Harvesters, etc.



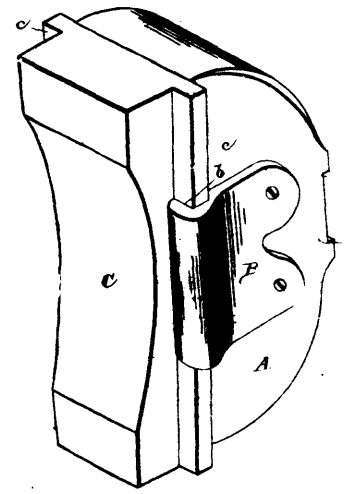
28061 Hewitt's Valve.



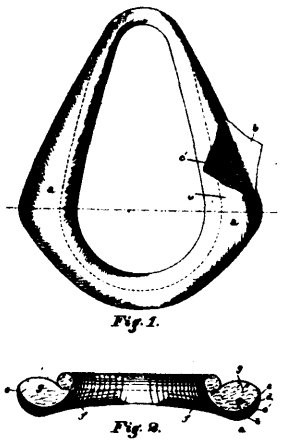
28062 **Hewitt's Valve and Coupling.**



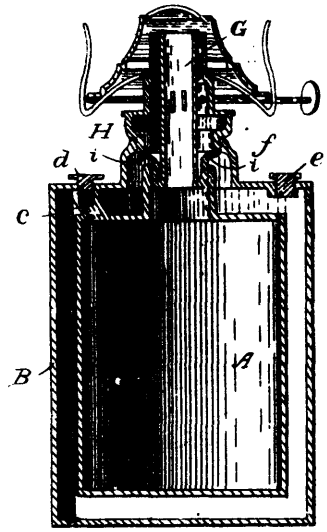
28063 **Vanmeter's Wind Mill.**



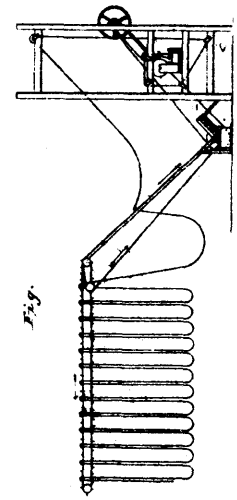
28064 **Milliken's Brake Block Attachment.**



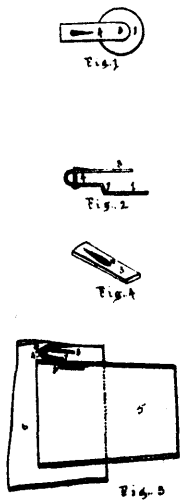
28065 **Bergman's Horse Collar.**



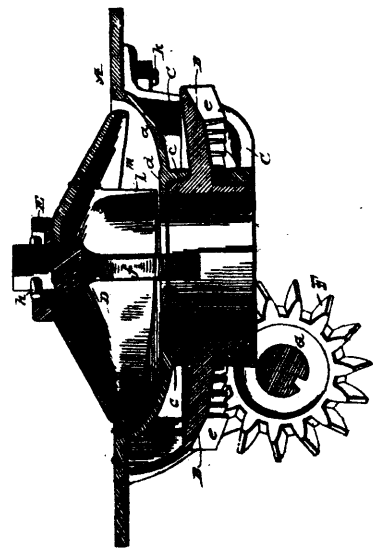
28066 **Davidson & Taylor's Safety Lamp.**



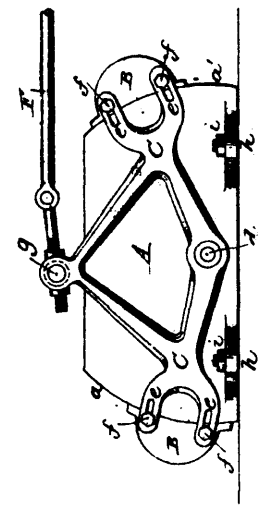
28067 **Eastman & Walker's Apparatus for Manufacturing Photographic Films.**



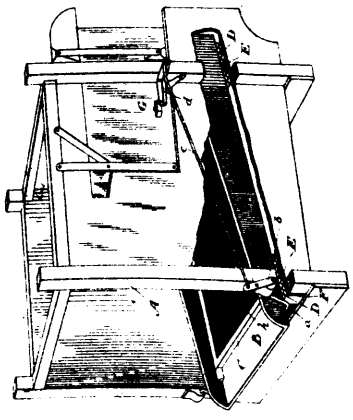
28068 **Howell's Cuff Holder.**



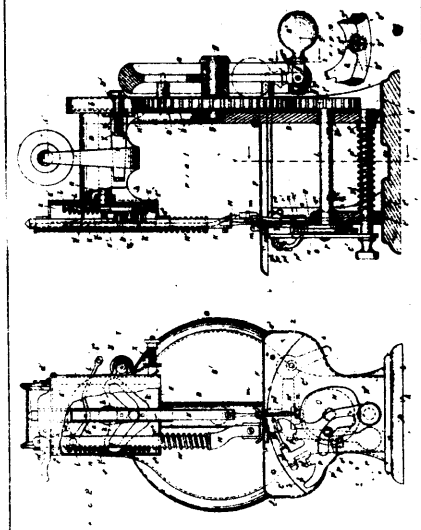
28069 **Everett's Fertilizer Distributor.**



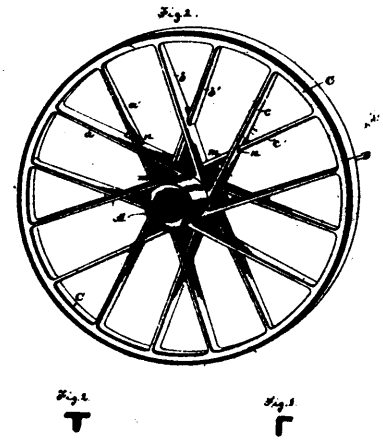
28070 **Mills' Duplex Steam Valve.**



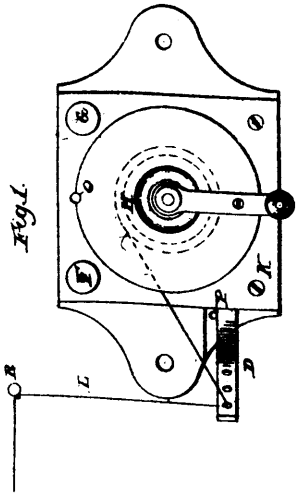
28071 Kline's Agitator for Fanning Mill Screens.



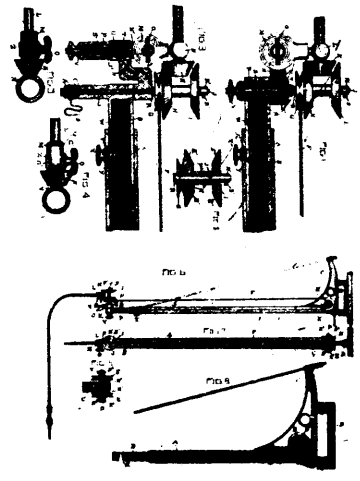
28072 Wileman's Sewing Machine.



28073 McCallum's Vehicle Wheel.

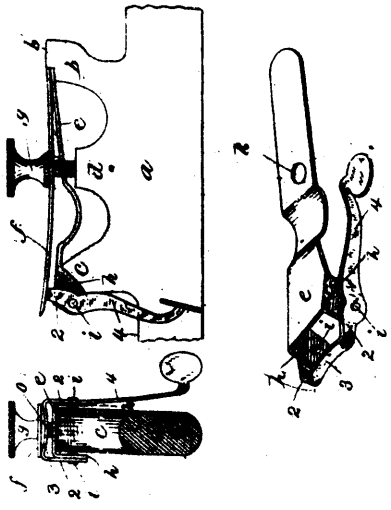


28074 Hough's Burglar Alarm.

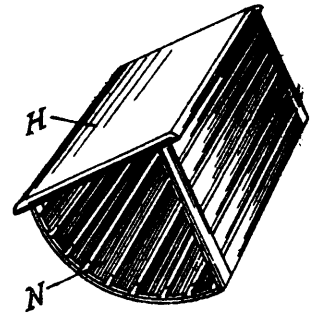


28075 Knowles' Dental Engine.

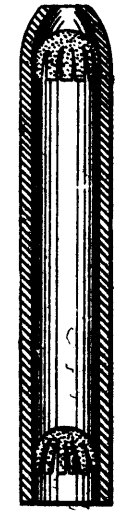
28076 Allan's Cigar and Cigarette.



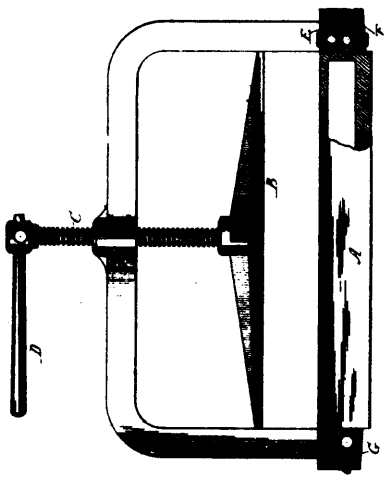
28077 Taylor, Cutts & Scates' Tension Releasing Device for Sewing Machines.



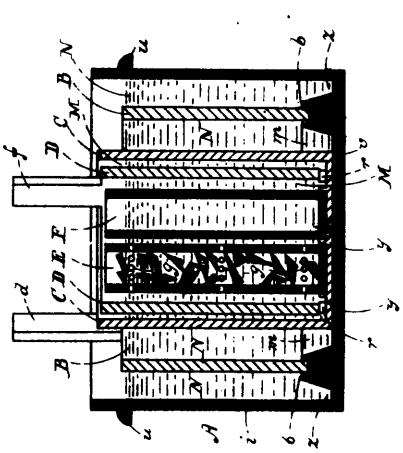
28078 Nash's Breaking Cart



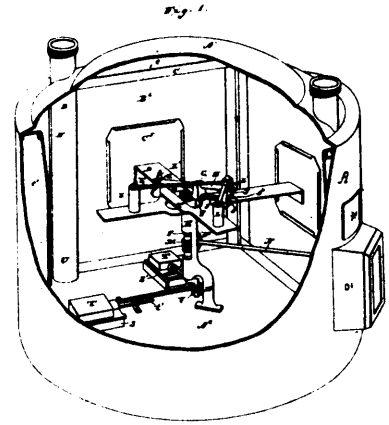
28079 Cushman's Open Stopper for Inhalers, etc.



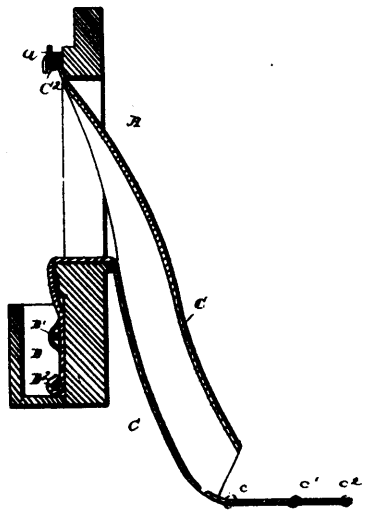
28080 Zeidler's Method of Applying Celluloid to Organ Keyboards, etc



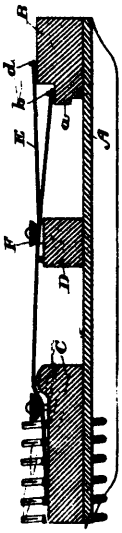
28081 Serson's Galvanic Battery



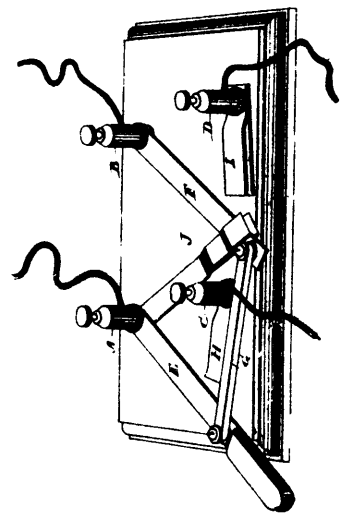
28082 Bell's Gas Meter.



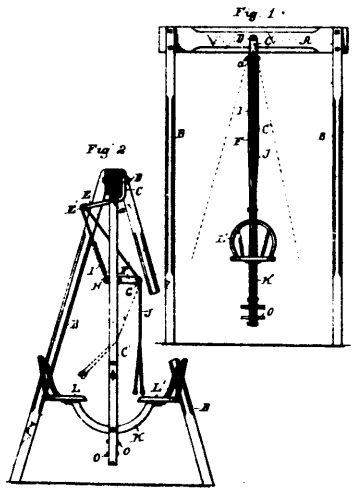
28083 Matson's Fire Escape.



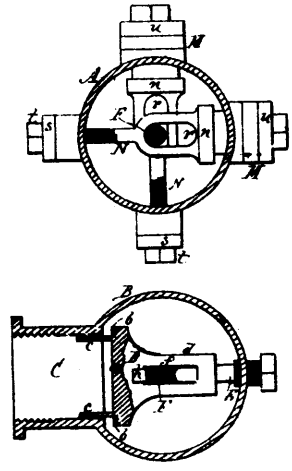
28084 Reich's Pianoforte.



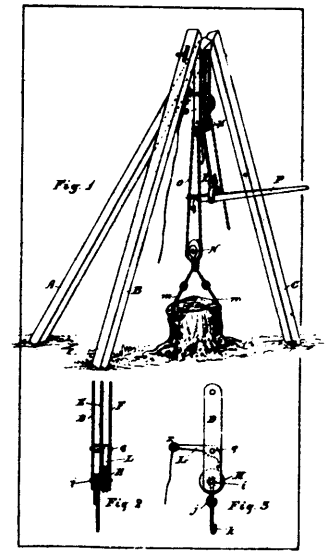
28085 Johnson's Electric Light Circuit Cut-Off Switch



28086 Bettes' Swing.



28087 Hand's Hydrant.



28088 Laframboise's Lifting Machine.

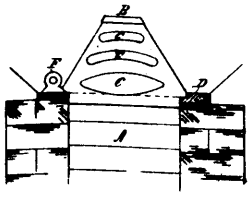


Fig. 1

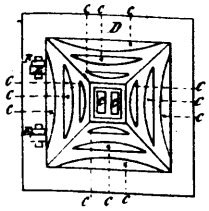
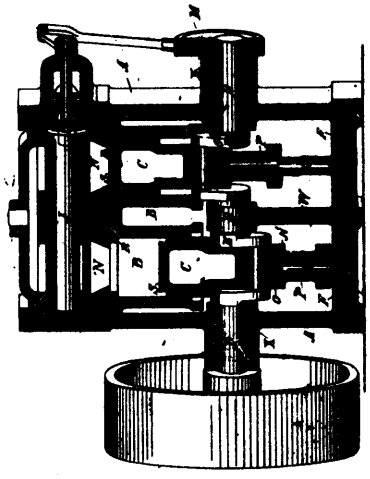
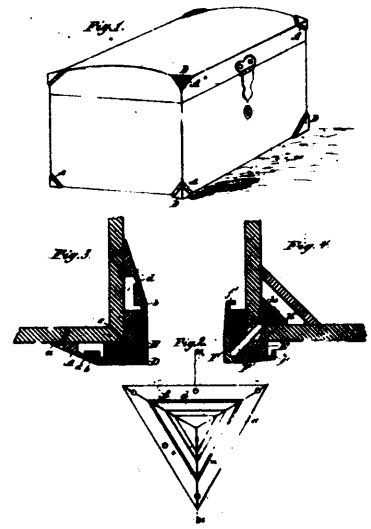


Fig. 2

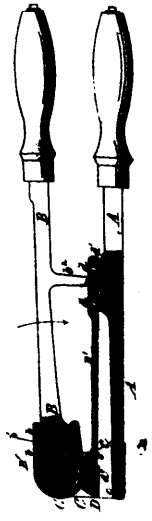
28089 **Carlile's Sewer Grate**



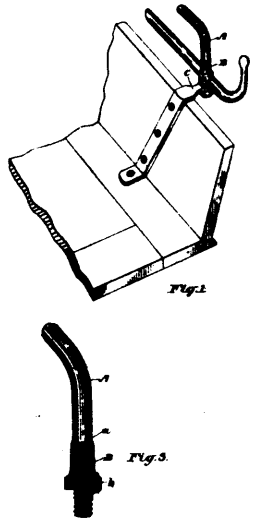
28090 **Hardy's Steam Engine.**



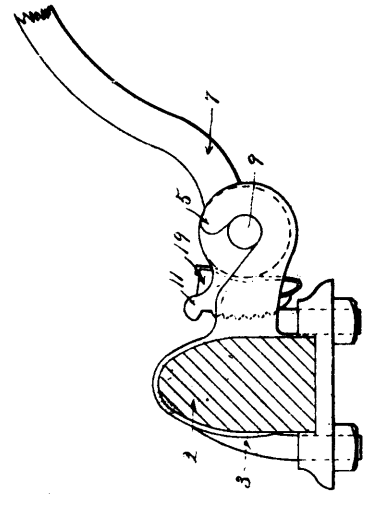
28091 **Garcia's Trunk Corner.**



28092 **Schofield's Seal Press.**



28093 **Conboy's Carriage Top Iron.**



28094 **Hawkenson's Thill Coupling.**

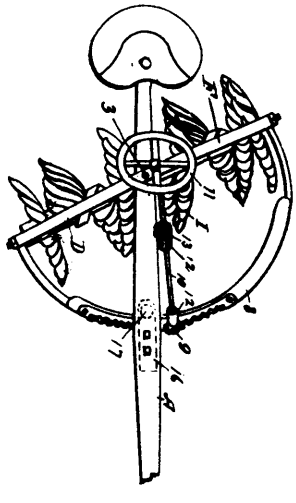
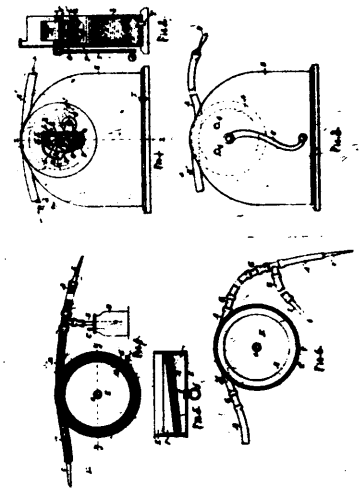
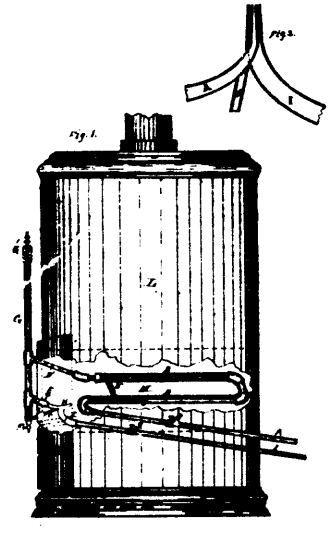


Fig. 2.

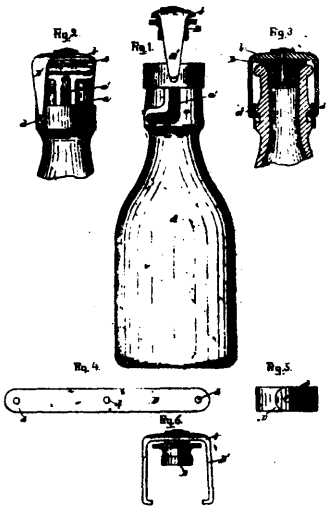
28095 **Newsom's Rotary Plough.**



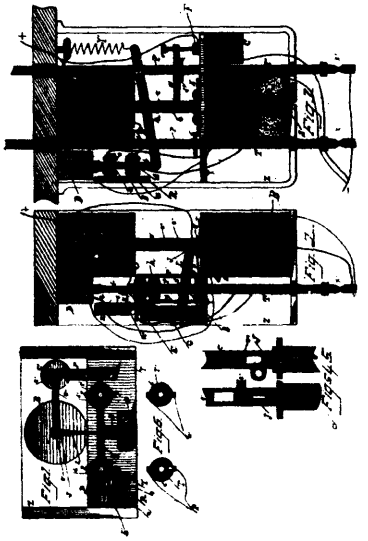
28096 **Allen's Instrument for the Transfusion of Blood.**



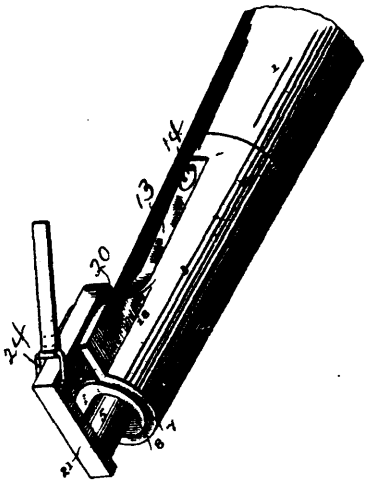
28097 **Corlis & Blackmore's Hydrocarbon Heater.**



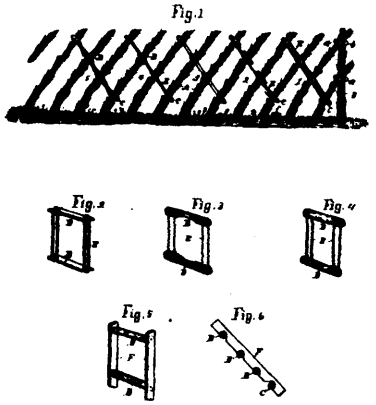
28098 **Fullerton's Bottle and Stopper.**



28099 **Noble's Electric Arc Lamp.**

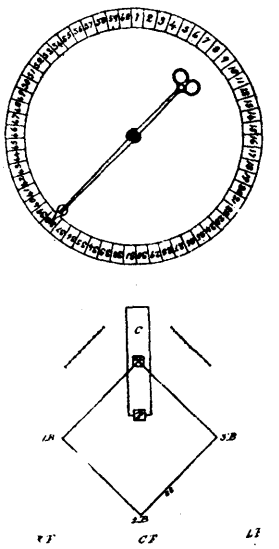


28100 **Parker's Horse Detacher.**

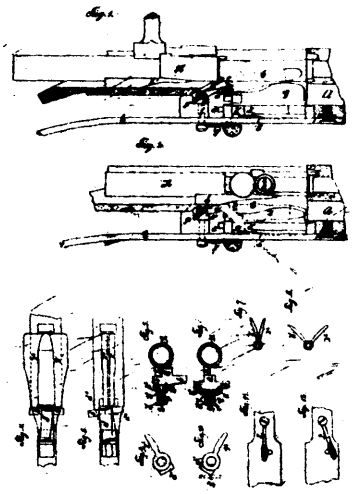


28101 **Aylworth's Hedge Fence.**

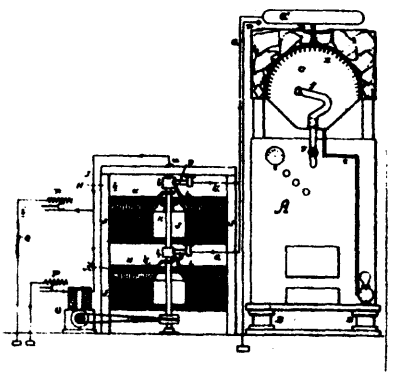
28102 **Schofield's Seal for Car Doors, etc.**



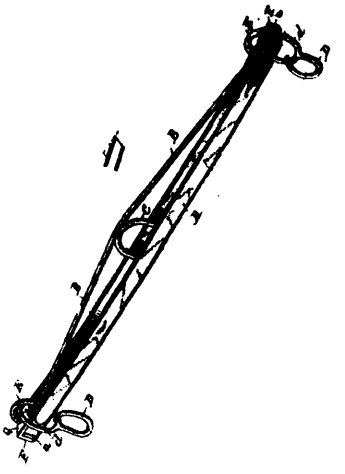
28103 **Drysdale's Parlour Base Ball.**



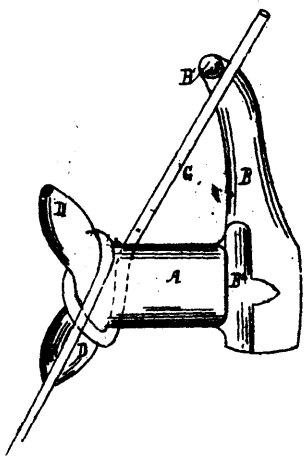
28104 **Dreyse's Fire-Arm.**



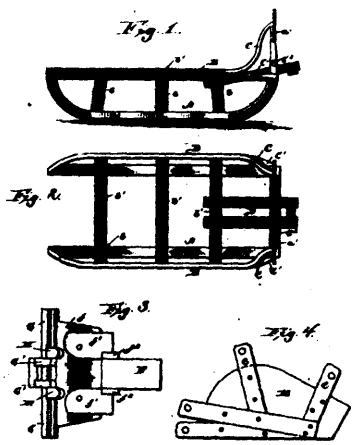
28105 **Parrish's Apparatus for Producing and Utilizing Electricity.**



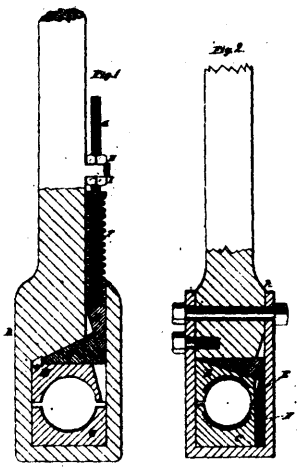
28106 **Stoner & Welch's Whiffletree and Neck Bar.**



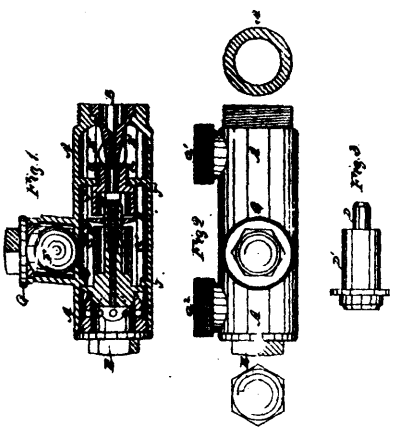
28107 Flynn & Kilburn's Wire Strainer and Key.



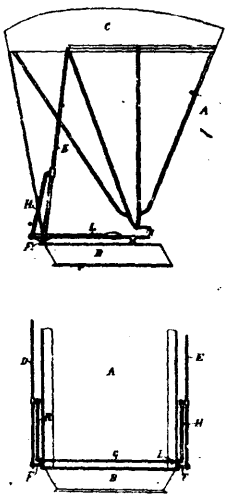
28108 Bender's Sleigh.



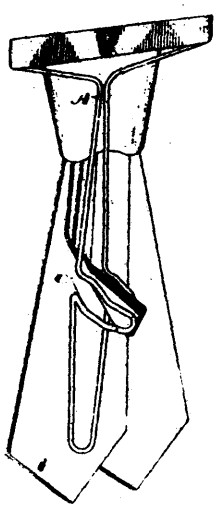
28109 Broomell's Pitman Box.



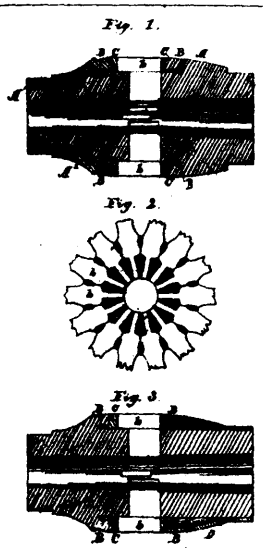
28111 Carroll's Steam Injector.



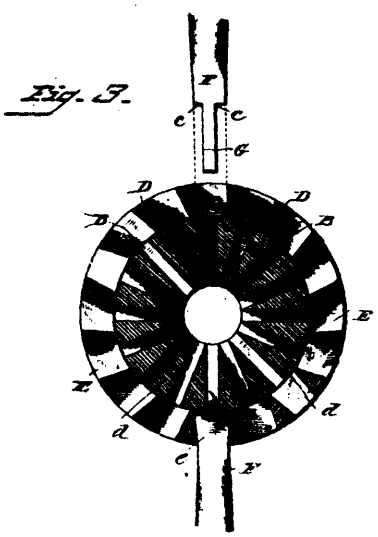
28112 Ward's Device for Raising and Lowering Carriage Tops.



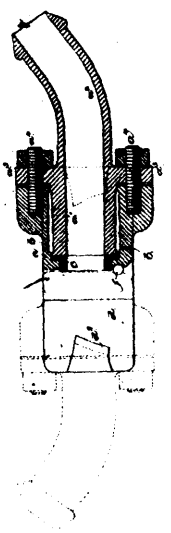
28113 Currie's Neck-tie Holder.



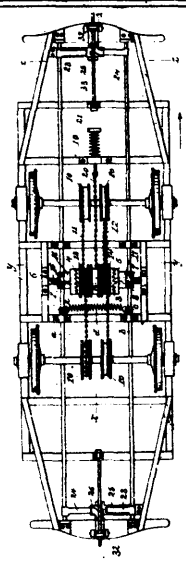
28115 Sweet's Vehicle Hub.



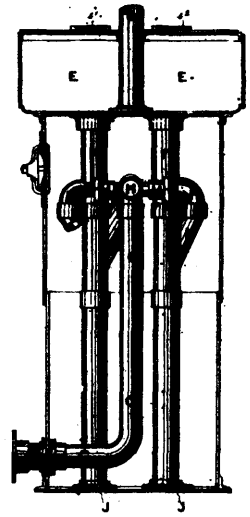
28116 Schad's Vehicle Hub.



28117 Sewall's Hose Coupling.



28118 Vereker & Yeates' Brake and Car Starter.



28119 Hewett's Boiler.

Fig. 1.

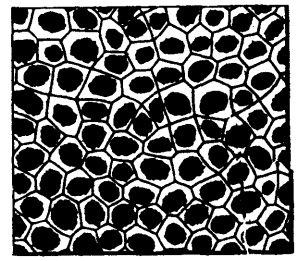
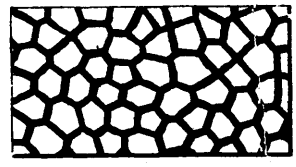
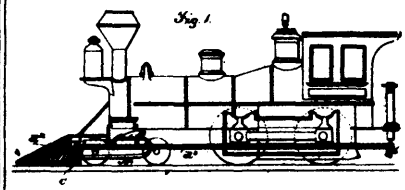
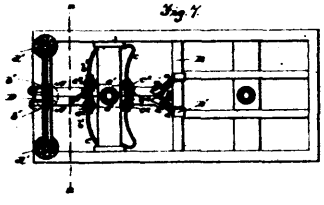


Fig. 2.

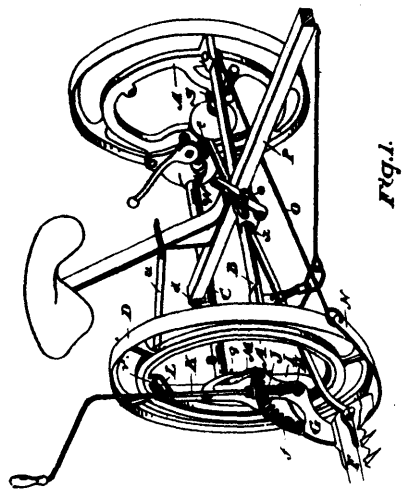


28120 Wood's Ornamentation of Sheet Metal.

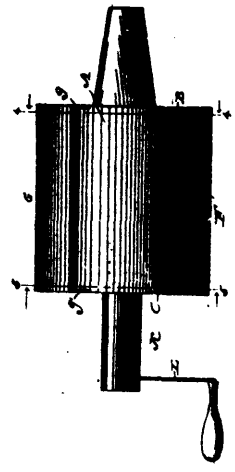




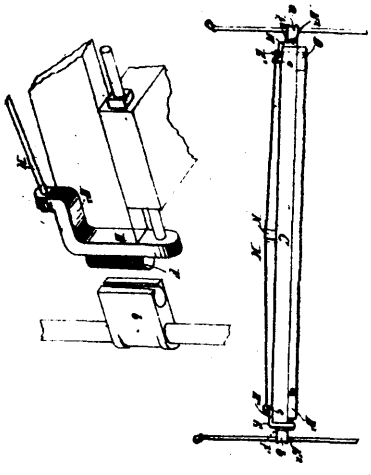
28121 Hahn's Mechanism for Operating Railway Gates, etc.



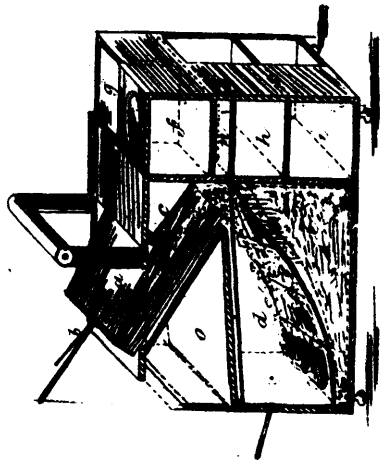
28122 Clokey's Mowing Machine.



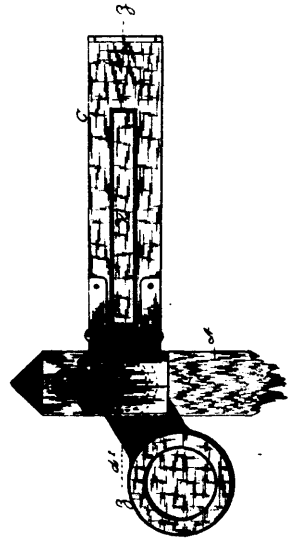
28123 LeBlanc's Draining Machine.



28124 Fairman's Bedstead.



28125 Dove's Dust and Cinder Sifting Box.



28126 Spicer & Schreuder's Semaphore Signal.