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INVENTIONS PATENTED.

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

No. 29,414. Car Heating Apparatus.

(Appareil de chauffage des wagons.)

The Sewall Safety Car Heating Company, Portland, Me., (assignee of Arthur C. Walworth, Boston, Mass.,) U.S., 3rd July, 1888; 5 years.

Claim—1st. The combination, with a car, of a system of circulating pipes within said car, and two heaters both in operative contact with said circulating system, or with branches thereof, and adapted to be operated simultaneously or separately for imparting heat thereto. 2nd. In a car heating system, the combination, with a system of water circulating pipes within the car, of a suitable radiator in contact with said circulating system or a branch thereof, mechanism for supplying said radiator with steam as a primary means of heating said circulating system, and a secondary heater also in operative contact with said circulating system and adapted to heat the same. 3rd. In a car heating apparatus, the main steam pipe, the branch pipe, steam drum and coil, and the circulation pipes combined with the auxiliary heater also connected with the circulation pipes, substantially as described.

No. 29,415. Carriage Step.

(Marche-pied de voiture.)

Frank B. Johnson and William F. Johnson, Addison, N. Y., U. S., 3rd July, 1888; 5 years.

Claim—The combination of the stationary pendent main shank having affixed to it the upper step, and provided with a vertical sleeve, the supplemental shank sliding longitudinally in said sleeve and provided with the lower step, and spring latches holding the supplemental shank in its elevated position, substantially as described and shown.

No. 29,416. Electric Motor. (Moteur Electrique.)

The George F. Card Manufacturing Company, (assignee of George F. Card), Covington, Ky., U.S., 3rd July, 1888; 5 years.

Claim—1st. In an electro-motor, the combination, with the exterior field magnet 3, of the following elements, to wit, the attached standard 2 perforated concentrically of the said field-magnet, the sh. 5 of the motor-pole armature, the bobbin-ring 4, and two formed field-poles composed of the attached projections N, S 7 of the inner and outer field magnets, in the manner set forth. 2nd. In the described combination with the armature-ring 4, the attached non-magnetic web 10, the recessed disk 11, the nut 12, the gasket 13 and the series of commutator-pieces 17, cups 18 and washers 19 having metallic contact with the terminals 20, 21 of the pairs of consecutive armature bobbins, substantially as set forth.

No. 29,417. Burglar Alarm.

(Avertisseur à sonnerie.)

William E. McIntosh and Frank H. Wyman, Keona, N. H., U. S., 3rd July, 1888; 5 years.

Claim—In an alarm device, a chamber provided with a curved floor which is slotted at the centre, and a loose roller in said chamber, in combination with an alarm mechanism having a bell, and provided with a striking hammer which is provided with an arm or projection in position to enter the slot in the floor when the hammer makes its upward movement, substantially as and for the purposes described.

No. 29,418. Curtain Carrier. (Porte-rideau)

Alfred Wood, Detroit, Mich., U.S., 3rd July, 1888; 5 years.

Claim—1st. The combination, with a ring, of a holder, balls or rollers held in place by said holder, said holder engaging the ends of the ring together, substantially as described. 2nd. The combination, with a ring, of a holder, balls or rollers held in place by said holder.

the ends of said holder impinging against the ring, substantially as described. 3rd. The combination, with a ring, of a holder and balls or rollers mounted upon said holder as an axis, substantially as described. 4th. The combination of a ring, a holder and balls or rollers held in place by said holder, said holder provided with an eye, substantially as described. 5th. The combination, with a ring, of balls or rollers mounted upon axis, said axis provided with an eye, substantially as described. 6th. The combination, with a ring formed of bent metal, of a holder balls or rollers held in place therewith by said holder, the extremities, of said ring held together by the impingement of the holder thereupon, substantially as described. 7th. The combination, with a ring formed of two or more sections, of two or more holders, balls or rollers secured in position by said holder the sections of the ring held together by said holders, substantially as described. 8th. The combination, with a ring made of a piece of tubing, of a holder having its ends engaged with the adjacent ends of the ring, balls or rollers supported by said holder and projecting beyond the inner surface of the ring, substantially as described. 9th. The combination, with a ring, of a ball or roller axially engaged thereupon, substantially as described. 10th. The combination, with a ring, of rollers mounted upon the periphery of the ring, substantially as described. 11th. The combination, with a ring recessed to receive balls or rollers, of balls or rollers engaged therewith, and means for holding said balls or rollers in place, and uniting the adjacent edges of the ring, substantially as described. 12th. The combination, with a ring, of a holder constructed with a stem to engage the ring, and balls or rollers held in place by said holder, substantially as described. 13th. The combination, with a ring of bent tubular metal, of a holder provided with balls or rollers, said holder located within the ring and having one or both its ends impinging against the shell of the ring, said balls or rollers projecting through the ring, substantially as described.

No. 29,419. Regulation of Dynamo-Electric Machine. (Régulateur de machine Dynamo-Electrique.)

Eros T. Higham and Daniel Higham, Philadelphia, Penn., U.S., 3rd July, 1888; 5 years.

Claim—1st. The combination of the dynamo shaft and engine shaft, and a spring connection between the two, and devices controlling the supply of motive fluid to the engine, with a compensator for the springs, substantially as and for the purposes set forth. 2nd. The combination of a dynamo-electric machine and driving-shaft, with a lever fast to the shaft, a wheel loose from the shaft, and springs connected at one end to the wheel, and having at the other end a connection to the varying tension of the springs, substantially as set forth. 3rd. The combination of a dynamo-electric machine and driving-shaft, with a lever fast to the shaft, a wheel loose from the shaft, an eccentric controlled by the wheel and lever to operate the valve of the motive-power engine, and springs connected at one end to the wheel, and having at the other end a connection with the lever varying the leverage of the latter in proportion to the varying tension of the springs, substantially as set forth. 4th. The combination of a dynamo-electric machine and driving-shaft, with the wheel loose on the shaft, a lever fast thereto and having inclined bearing-faces, with an eccentric operated by the wheel to control the engine-valve, and springs connected to the wheel and having strap connection with the inclined faces of the lever, all substantially as specified.

No. 29,420. Automatic Grain Meter.

(Compteur automatique à grain.)

Alfred Springer, Cincinnati, Ohio, and William Kont, Passaic, N. J., U.S., 3rd July, 1888; 15 years.

Claim—1st. A grain meter embodying in combination with the ordinary mechanism for utilizing the weight of the grain, in producing automatically a rotary or vibratory movement of the parts, molecular pivot or pivots through, or by means of which a measured resisting force is applied to determine and regulate such movement, substantially as and for the purposes specified. 2nd. The combination, in an automatic grain meter, of a pivoted disc or frame carrying receiving buckets, and rotated by the grain delivered successively to said buckets, a projecting stud upon said disc or frame, an engaging resisting arm oscillating upon a molecular pivot constituting an inde-

pendent center or holding axis, substantially as set forth 3rd. In an automatic grain meter, the combination of a rotating disc or frame, a molecular pivot mounted upon an independent supporting frame, a rigid arm attached to said pivot as a fulcrum and engaging said stop or detent by contact, and a regulating weight carried upon the extension of said arm, substantially as set forth. 4th. In an automatic grain meter, in which is embodied oscillating or rotating mechanism actuated by the passage of grain through the same, and a molecular pivot through or by means of which the resisting force is applied, a "tension frame" combined with an endless strip of elastic metal constituting the torsion pivot carried around said frame and thereupon maintained in tension, substantially as set forth 5th. In a rotating automatic grain meter, the combination of a rotating bucket wheel provided with an engaging stop, a spring-held arm engaging said stop by temporary contact, and a conduit valve carried by a standard upon and reciprocated by the oscillation of said arm, substantially as set forth 6th. In a grain meter, the combination of the following elements, viz: a rotating bucket wheel, an engaging stop upon said wheel, a balance beam having a pivotal resistance and engaging said stop by temporary contact, a delivery valve carried medially by and reciprocated by said balance beam across the supply orifice, and cams upon the bucket wheel adapted to engage the connections of said valve, and to retain the same closed during the revolution of the wheel and buckets until the proper bucket reaches its filling position, substantially as set forth.

No. 29,421. Money Till or Drawer for Checking and Recording. (*Tiroir-casse pour contrôler et enrégistrer*)

James E. Farrow, Southport, and James M. Carson, Salford, Eng., 3rd July, 1888; 5 years.

Claim.—1st. A money till or drawer for checking and recording having an index plate cut with slots, and inscribed with a scale for each denomination of money, in combination with an operating lever or pointer, substantially as described. 2nd. A money till or drawer for checking and recording having one, two, or more revolving drums, which display the amounts of money registered, and a corresponding number of sliding racks which actuate the recording and counting mechanism, in combination with an operating lever and index scale. 3rd. In a money till or drawer for checking and recording, the combination, with the index plate having scales inscribed thereon, of the operating lever *F* and pointer *e*, substantially as described. 4th. In a money till or drawer for checking and recording, the combination, with the index plate *C*, of the actuating lever *E*, the finger or pointer *e* and the sliding rack *F*, substantially as described. 5th. In a money till or drawer for checking and recording, the combination of a sliding rack *F*, pinion *G* and recording or counting mechanism and dials *I*. 6th. In a money till or drawer for checking and recording, the combination, with the sliding rack which actuates the recording mechanism, of a swinging rack frame by the movement of which the racks are moved into and out of gear with the pinions with which they engage. 7th. In a money till or drawer for checking and recording, the combination of the racks *F*, the rods or pillars *f* and the cross bars *f*, substantially as and for the purposes described. 8th. In a money till or drawer for checking and recording, the combination, with the sliding racks of pinions having one or more teeth or projections on the back, and pivoted levers which transmit a movement from one wheel to the next for the purpose of registering the amounts on the recording mechanism, substantially as described and shown Fig. 7. 9th. In a money till or drawer for checking and recording, the combination, with the sliding racks *F*, of the pinions *G*, the pivoted levers *H*, the levers *h*, substantially as and for the purposes described. 10th. In a money till or drawer for checking and recording, the combination, with the sliding rack *F* and swinging rack frame *f*, of the pinion *G* and the weighted guard or tumbler *N*. 11th. In a money till or drawer for checking and recording, the combination, with the sliding racks *F* and pinions *G* having teeth *g* on their back, of the catch or pawl levers *J*, the pivoted levers *H* and *h*, and the recording dials *I*. 12th. In a money till or drawer for checking and recording, the combination, with the sliding actuating rack *F*, of the pinion *G*, pawl or catch lever *J*, bell *K* and bell hammer *L*, substantially as described and shown. 13th. In a money till or drawer for checking and recording, the combination, with the sliding rack and swinging rack frame of the pivoted lever *i*, substantially as and for the purposes described. 14th. In a money till or drawer for checking and recording, the use or combination of a revolving drum *L* having numerals inscribed on its periphery, which displays in a prominent place before the customer the amount recorded, substantially as and for the purposes described. 15th. In a money till or drawer for checking and recording, the combination of the revolving drums *L*, pulley *i*, cord or band *M*, sliding racks *F* and operating levers *E*, substantially as described. 16th. In a money till or drawer for checking and recording, the combination, with the sliding racks and swinging rack frame, of the pivoted fork *O* and swinging bracket *o*, substantially as and for the purposes described. 17th. In a money till or drawer for checking and recording, the combination, with the sliding racks and swinging rack frame, of the fork *O*, bracket *P*, swinging bracket *o* and spindle *p*, substantially as described. 18th. In a money till or drawer for checking and recording, the combination, with the sliding racks and swinging rack frame, of a pivoted hook or catch *S*, to lock or retain the racks out of gear with the pinions. 19th. In a money drawer or till for checking and recording, the combination of the sliding racks, swinging rack frame, pivoted hook or catch *S* and bolt or lock on the drawer, substantially as and for the purposes described. 20th. In a money till or drawer for checking and recording, the combination, with the cash drawer, of a pulley *t*, band *U*, spiral spring *U* and spindle *v*, substantially as described and shown. 21st. A money till or drawer for checking and recording the amounts taken, in which the amount is displayed before the customer and a record of the amounts kept, constructed and arranged substantially as described and shown.

No. 29,422. Metallic Leaf and Flower.

(*Feuille et fleur métalliques*.)

Richard W. Russell, Hamilton, Ont., 3rd July, 1888, 5 years.

Claim.—The combination of a metal stem or stem *A*, having trolley wires provided with metal leaves and flowers attached to the same, and secured thereto by means of hooked solder, and the blow pipe, substantially as and for the purpose hereinbefore set forth.

No. 29,423. Gas Burner. (*Dec à gaz*.)

Walter M. Jackson, New York, N.Y., U.S., 3rd July, 1889; 5 years.

Claim.—1st. In a gas burner, the combination, with a shell having an outwardly extended flange adapted to fit within the rim of an opposed shell, of a flexible diaphragm, the edge of which is adapted to lay between the opposed flat flange of the two metal shells, and be secured between them by the returned edge of one flange clamping upon the outer surface of the other flange, substantially as set forth. 2nd. In a gas burner, the combination, with a diaphragm to separate the interior of a burner into two gas chambers, of two interlocking diaphragm plates, one located above and one below the diaphragm, they being secured in place by slots in one plate, and tongues integrally struck from the other plate to enter the slots and be clinched on the plate, substantially as set forth. 3rd. In a gas burner, the combination, with a flexible diaphragm adapted to separate the interior of a burner into two gas chambers, of two interlocking diaphragm reinforce plates, the upper plate being provided with a cupped recess in its under side adapted to receive the head of a valve stem, and the under plate provided with a perforation for the passage of the valve stem, substantially as set forth. 4th. In a gas burner, the combination, with a flexible diaphragm adapted to separate the interior of a burner into gas chambers, of a pair of interlocking diaphragm plates one located above and one below the diaphragm of the plates, being provided with legs that are adapted to rest upon an interior shoulder or floor of the burner shell, substantially as set forth. 5th. In a gas burner, the combination, with a flexible diaphragm and a gas regulating valve suspended therefrom, of a diaphragm plate provided with legs adapted to engage a shoulder or floor within the burner shell, and thereby limit the depression of the diaphragm and its connected valve, substantially as set forth. 6th. In a gas burner, the combination, with a pair of diaphragm reinforce plates located one above and one below the flexible diaphragm, of a gas regulating valve suspended from the flexible diaphragm, the head of the valve stem being located in a recess in the under side of the cap plate, and resting upon the diaphragm, substantially as set forth. 7th. In a gas burner having the gas to be burned on both sides of a diaphragm, and a pendant weighted valve operated by gas pressure against said diaphragm by means of which the gas is partially or wholly cut off or put on, the combination, with the pendant valve, of an independent by pass, substantially as set forth. 8th. In a gas burner, the combination, with the jointed shells, a superimposed secured diaphragm and a valve pendant from the diaphragm to oppose a valve seat in the base plate of the lower shell, of a conical valve, and a gas by-pass made in the base wall of this lower shell to admit a limited amount of gas into the lower chamber of the burner independent of the valve, substantially as set forth.

No. 29,424. Bottle Filler. (*Embouteilleuse*.)

William H. Comstock, Oskaloosa, Iowa, U. S., 3rd July, 1888; 5 years.

Claim.—1st. The combination, with a filling cylinder having an inlet at one end, and a valve outlet between its ends, of a piston within the cylinder provided with a valve opening away from the inlet end, and a piston rod passing through the opposite end of the said filling cylinder, substantially as shown and described. 2nd. The combination, with a filling cylinder having an inlet at one end, a valve outlet between its ends, and a flexible siphon tube or pipe connected with the inlet of a piston within the cylinder provided with a valve opening away from the inlet, and a piston rod extending through the opposite end of the cylinder, substantially as shown and described. 3rd. In a bottle filler, the combination, with a filling cylinder provided with short tubes, of a valve held in each of the said short tubes, and a bottle holder, substantially as described, located under each of the said valves, substantially as shown and described. 4th. In a bottle filler, the combination, with a valve having a hollow stem provided with a collar, of a bottle holder located under the lower end of the said stem, so that the latter passes into the mouth of the bottle, and the stem collar rests on top of the bottle, and a weighted lever carrying at one end the said bottle holder, substantially as shown and described. 5th. In a bottle filler, the combination, with a weighted lever, of a bottle holder comprising a flanged tube held on one end at the said lever, and a spring secured to the said tube and adapted to engage the neck of the bottle, substantially as shown and described. 6th. In a bottle filler, the combination, with a valve adapted to open into the filling cylinder and provided with a hollow stem having a collar, of a weighted lever extending with its front end under the lower end of the said valve stem, and a bottle holder held on the front end of the said lever, and adapted comprising a flanged tube pivoted on the said lever, and springs secured on the said tube and adapted to engage the neck of the bottle to be filled, the mouth of the said bottle passing over the lower end of the said valve stem, and the said collar of the latter resting on the top of the bottle, substantially as shown and described. 7th. In a bottle filler, a valve adapted to open into the filling cylinder, a spring for closing said valve, and a valve tube in which the said valve operates, in combination with a bottle rest pivoted at its lower end, a link connected with the said bottle rest, a lever connected with the said link, and a weight adapted to slide on the said lever, so as to counterbalance the pressure of the spring and the weight of the bottle when filled, substantially as shown and described. 8th. In a bottle filler a valve adapted to open into the filling cylinder, a spring for closing said valve, and a valve tube in which the said valve operates, in combination with a bottle rest pivoted at its lower end, a link connected with the said bottle rest, a lever connected with the said link, a weight adapted to slide on the said lever, an arm extending from the lower end of the said bottle rest, and an adjustable spring connected with the said extension, and operating in conjunction with the said weight, so as to counterbalance the pressure of the spring on the valve and the weight of the bottle when filled, substantially as shown and described.

No. 29,425. Seal Lock for Freight Cars.*(Serrure à cachet pour chars à marchandises.)*

Le Roy C Godwin, Portsmouth, Va., U.S., 3rd July, 1888; 5 years.

Claim.—1st. In a door lock, the combination, with a casing secured to the car door, of a frame held to slide in the said casing and provided with slots for the reception of a ticket or card, and a tumbler plate pivoted in the said casing and passing through the said frame being adapted to engage the car door post, substantially as shown and described. 2nd. In a door lock, the combination, with a casing secured to the car door, of a frame held to slide in the said casing, and provided with slots for the reception of a ticket or card, a tumbler plate pivoted in the said casing and passing through the said frame, and a cam turning on the pivot of the said tumbler plate, and adapted to be engaged by a projection on one side plate of the said frame, substantially as shown and described. 3rd. In a door casing, the combination, with a casing secured to the car door, of a frame held to slide in the said casing, and provided with slots for the reception of a ticket or card, a tumbler plate pivoted in the said casing and passing through the said frame, a cam turning on the pivot of the said tumbler plate, and a pin secured to the said tumbler plate and operating on one edge of the said cam, substantially as shown and described. 4th. In a door lock, the combination, with a pivoted tumbler plate having a lug on its front edge, of a frame through which said tumbler plate passes, and provided with slots and lugs projecting into the said slots, so as to hold a card or ticket in place in the said slots at the front edge of the said tumbler plate, substantially as shown and described.

No. 29,426. Rivetting Machine.*(Machine à river.)*

Judson I. Thomson & Co., assignees of Jacob J. Unbehond, Syracuse, N.Y., U.S., 3rd July, 1888; 5 years.

Claim.—1st. The combination of the pivoted stock A, rivetting block B having a screw G and nut C, substantially as and for the purpose set forth. 2nd. The combination of the stock A, rivetting block B, provided with the adjustable shoe holder D, the plunger P, spiral K and spring H, having the stud I taking in the recess L in the screw G, substantially as and for the purpose set forth. 3rd. The combination of the stock A having the tongue a, the rivetting block B having the screw G, provided with the vertical groove a' for the tongue a of the stock, and the nut C, all substantially as and for the purpose set forth. 4th. In a rivetting machine, the combination of a rivetting block having a screw-threaded shank mounted in a stock A, a nut C for adjusting the rivetting block, the nut being provided with vertical grooved shaped serrations c, and a spring lever or stop secured to the stock, and having a projection taking in the serrations in the nut to prevent it from turning, substantially as and for the purpose set forth. 5th. The combination of the vertically adjustable rivetting block having the screw shank G mounted in the stock A, and the plunger P, the screw shank G being provided with a screw P' against which the plunger P operates, the screw P' serving to compensate for the vertical adjustment of the rivetting block without changing the stroke of the plunger, substantially as and for the purpose set forth.

No. 29,427. Rivetting Machine.*(Machine à river.)*

Judson I. Thomson & Co., assignees of Judson I. Thomson and Jacob J. Unbehond, Syracuse, N.Y., U.S., 3rd July, 1888; 5 years.

Claim.—1st. The herein described rivetting machine comprising an automatic feed for feeding the rivets to the heading mechanism, for distributing and arranging the rivets circumferentially on the heel of the arctic or overshoe, and means, substantially as described, for cutting off the feed automatically while the rivets are being clinched by the heading mechanism, all constructed and operating substantially as and for the purpose set forth. 2nd. The combination, in a rivetting machine, for inserting rivets in the heel of an arctic or overshoe, of feeding mechanism for automatically feeding the rivets to the heading mechanism, for distributing and arranging the rivets circumferentially on the heel of the overshoe, means, substantially as described, for forcing the rivets into the heel, and a combined adjustable rivetting block and shoe holder, substantially as and for the purpose set forth. 3rd. The combination, in an automatic rivetting machine, of a receptacle or hopper for the rivets having passages or discharge openings enlarged at their lower ends for the exit of the rivets therefrom, means substantially as described, for forcing the rivets to, and into the discharge openings, and means, substantially as described, for compelling the rivets to enter the feeding tubes shank foremost, substantially as and for the purpose set forth. 4th. The combination, in an automatic rivetting machine, of a receptacle or hopper for the rivets, brushes, and a solid wing, all depending from an oscillating frame in the hopper oscillating over openings in the bottom of the hopper, said openings being enlarged at one end and covered with a plate for feeding the rivets shank foremost into the feeding tubes, a feeding tube connected to the receptacle for conveying the rivets to the heading mechanism, and a cut-off in the exit end of the tube operated by the descent of the rivet forcing punch, and a rivet forcing punch for discharging the rivets one at a time and forcing the same into the overshoe, substantially as and for the purpose set forth. 5th. In a rivetting machine, an automatic feed for feeding the rivets to the heading mechanism, for distributing the rivets circumferentially on the toe or heel of the arctic or overshoe, means, substantially as described, for cutting off the feed automatically while the rivets are being clinched by the heading mechanism, and means substantially as described, for guiding the rivets to enter the washer plate when forced into the sole or heel of the overshoe, substantially as and for the purpose set forth. 6th. The combination of an automatic feeding receptacle or hopper, having a conical bottom provided with openings enlarged at their lower ends, said enlargement being covered by a plate depending oscillating brushes, and a solid wing or sweep oscillating on the bottom of said hopper for feeding the rivets shank foremost into conveying feed tubes, a

series of conveying feed tubes connected to the receptacle and having their exit or discharge ends arranged in the arc of a circle to distribute the rivets circumferentially on the heel or toe of an overshoe, substantially as described. 7th. The combination, with an automatic feed receptacle or hopper for feeding the rivets shank foremost into conveying feed tubes, of a series of conveying feed tubes connected to the hopper, and a series of punches or plungers, the feed tubes having their exits or discharge ends arranged in the arc of a circle, to distribute the rivets circumferentially on the heel or toe of an overshoe, and the punches or plungers arranged to pass through the discharge ends of the tubes, and force the rivets into the heel or toe of the overshoe, substantially as and for the purpose set forth. 8th. The combination, of a feed receptacle having in the bottom thereof an elongated opening enlarged at one end, the enlargement being covered by a plate, a feed tube connected to the opening to receive the rivets, and a screw in the upper end of the tube to turn the rivets shank foremost, substantially as and for the purpose set forth. 9th. The combination, with the spring discharge valve, of a pivoted guide embracing the spring valve or valve, and a punch or plunger for operating to remove the guide as the rivet is forced out of the spring gate by the plunger in its descent, substantially as and for the purpose set forth. 10th. The combination, with the spring gate or exit at the discharge end of the feed conveying tube, of a guide embracing the said gate to hold the rivet against lateral displacement, as it is fed to and forced into the overshoe, substantially as and for the purpose set forth. 11th. The receptacle A having conical bottom B, discharge openings 5 with enlargement 6 and plate 7, in combination with the oscillating brushes 3 and conveying tubes 4, substantially as and for the purpose specified. 12th. The receptacle A having discharge openings 5, plate 7 and screw 8 extended into the path of the rivets as they drop into the conveying tubes B, in combination with the conveying tubes B, substantially as and for the purpose set forth. 13th. The combination of the receptacle A having conical bottom B, openings 5, feed conveying tubes B with spindle 2, brushes 3, lever 9 having slot 10, lever 11 pivoted at 12 to lever K, slotted lever K pivoted to the bracket D and actuated by the lever G, substantially as and for the purpose set forth. 14th. The combination, of the plunger J carrying the punches 1, of the toggles a, c, lever G, guide H, and the toggles a, c, lever 11, toggle 5 and the connecting rod 4, substantially as and for the purpose set forth. 15th. The combination of the punches c, and the combined rivetting block and shoe holder C, Cr, and means substantially as described, for returning them to their normal position after the rivets are inserted in an overshoe, substantially as and for the purpose set forth. 16th. The spring discharge valves 1, made in one piece of spring metal bifurcated to form spring arms, elongated and provided with lips r, r near their exits, and secured to the depend a, a, substantially as and for the purpose set forth. 17th. The spring discharge valves b, made in one piece of spring metal bifurcated to form spring arms, and having the opening b', substantially as and for the purpose set forth. 18th. The combination of the spring discharge valves b having slot or opening b', with the discharge end of the feed conveying tube B having cut-off c, substantially as and for the purpose set forth. 19th. The combination of the discharge valves b, feed tubes B having cut-off c, and the fingers d, substantially as and for the purpose set forth. 20th. The combination of the fingers c, d secured on the support ar carried on the plunger head J, and the cut-off c in feed conveying tubes B supported on the arc-shaped bracket a, substantially as and for the purpose set forth. 21st. The plunger head J having a series of punches c, c arranged in the arc of a circle thereon, and depending therefrom, in combination with a like series of spring discharge valves b arranged in the arc of a circle underneath the punches, and a pivoted forked yoke O having arms o, o, o embracing the sides of the spring discharge valves, substantially as and for the purpose set forth. 22nd. The combination of the punch c carried on the plunger head J, with the spring valve b, and the forked yoke O embracing the sides of the valve b, and pivoted to a support ar secured to the frame of the machine, the said yoke having the eccentric lever ar, lying in the path of the edge c of the plunger head J in its descent, substantially as and for the purpose set forth. 23rd. The combination of the plunger head J, punch c, spring valve b and yoke O, substantially as and for the purpose set forth.

No. 29,428. Multiple Telegraph System.*(Système de télégraphe multiple.)*

Charles Selden, Baltimore, Md., U.S., 3rd July, 1888; 5 years.

Claim.—1st. A telegraph receiving instrument, consisting of two insulated arms carrying magnets at their extremities, controlling a local circuit, substantially as described. 2nd. A telegraph receiving instrument, consisting of two insulated arms carrying magnets at their extremities, and adapted to be vibrated to control a local circuit, substantially as described. 3rd. A telegraph receiving instrument, consisting of two arms having magnets at their extremities, the cores of the magnets forming contact pieces for controlling a local circuit, substantially as described. 4th. A telegraph instrument consisting of two spring arms carrying magnets at their extremities, said arms forming part of a local circuit containing a son ider, substantially as described. 5th. A telegraph instrument consisting of two spring arms carrying magnets, the cores of which form contact pieces, combined with a local circuit containing a differentially wound sounder, substantially as described. 6th. A telegraph instrument, consisting of two arms carrying magnets and contact pieces at their ends, the said arms forming part of a local circuit, and springs for controlling the pressure of said contact pieces, substantially as described. 7th. A telegraph instrument, consisting of two spring arms connected to an insulating support, and forming part of a local circuit, magnets upon the extremities of said arms, cores of the magnets provided with platinum contact pieces, and means for adjusting said arms, substantially as described. 8th. A telegraph instrument consisting of two insulated arms carrying magnets at their extremities, in combination with the line circuit passing through one or both of the magnets, and adapted to control a local circuit, substantially as described. 9th. The combination, with a telegraph line circuit, of two receivers, each consisting of two arms carrying magnets controlled by said line circuit, and arranged and adjusted to be operated by varying currents, substantially as described. 10th. The combina-

tion, with a telegraph line circuit, of two receivers each consisting of two arms forming part of a local circuit, and carrying magnets at their extremities controlled by said line circuit, one of the receivers being arranged to respond to currents of one polarity, and the other to currents of strength, substantially as described. 11th. The combination, with an ordinary Morse or other galvanic telegraph line circuit, of an induced current circuit containing receivers, each consisting of two arms carrying magnets controlled by the induced current circuit, and separators connecting said galvanic and induced current circuit, substantially as described. 12th. A receiver consisting of two magnets supported on, and carried by flexible supports, and controlling a local circuit, whereby the said local circuit may be controlled by the attraction or repulsion of the said magnets, substantially as described.

No. 29,429. Automatic and Autographic Telegraphy. (*Télégraphie automatique et autographique.*)

Charles Selden, Baltimore, Md., U.S., 3rd July, 1888; 5 years.

Claim.—1st. As an improvement in the art of autographic telegraphy, the method substantially as hereinbefore described, which consists in causing superimposed series of electric impulses controlled by the original to be transmitted to pass over a line, then causing each series separately to generate acoustical vibrations at the receiving station, and utilizing said vibrations to produce the fac-simile. 2nd. As an improvement in the art of autographic telegraphy, the method substantially as hereinbefore described, which consists in causing superimposed series of electrical impulses controlled by an original to be transmitted to pass over a line, then translating each series separately into acoustical vibrations, then retranslating the latter into magnetical vibrations and utilizing these to produce the fac-simile. 3rd. The combination, with a series of differently tuned circuit controlling vibrators, sending impulses to the line, of an original controlling said impulses, acoustical apparatus responsive to said impulses, and indicating device controlled by the acoustical apparatus, substantially as described. 4th. The combination, with a series of differently tuned circuit controlling vibrators sending impulses to line, said impulses being controlled by an original, of acoustical receivers tuned to correspond with the vibrators, electromagnets controlled by said receivers, and indicating levers operated by said magnets, substantially as described. 5th. In an autographic telegraph the combination of a series of differently tuned circuit controlling vibrators, all connected in the same circuit, a moving original formed of conducting and non-conducting parts, and contacts bearing upon the same, each connected to one of the circuit controllers, and acoustical receivers tuned to correspond with the vibrator, substantially as described. 6th. In an autographic telegraph, a cylinder carrying the original to be transmitted divided into sections insulated from each other, in combination with a series of contact fingers bearing upon each of the insulated sections, and a tuned circuit controlling vibrator for each finger, substantially as described. 7th. The combination, with a tuned reed or tuning fork, of a similarly tuned resonator provided with a diaphragm, said circuit controlling devices operated by said diaphragm, substantially as described. 8th. The combination, with a tuned reed or tuning fork, of a similarly tuned resonator provided with a diaphragm, a circuit controller operated by said diaphragm, and an electromagnet in said circuit, substantially as described. 9th. The combination, with a series of tuned reeds or tuning forks, of a series of similarly tuned resonators, each provided with a diaphragm circuit controllers arranged for joint operation, a series of electromagnets arranged for joint operation, substantially as described.

No. 29,430. Trough for Water Closets.

(*Cuvette de siège d'aisance.*)

William B. Parsons, New York, N.Y., U.S., 3rd July, 1888; 5 years.

Claim.—1st. In a water closet, a trough formed with a series of basins located at different levels, each having curved sides and being curved upon the bottom, substantially in the manner described, so connected with each other by curved surfaces that a ridge or elevation is formed between the same. 2nd. In a water closet, the combination, substantially as hereinbefore set forth, with the trough provided with a series of basins located on different levels, of a seat board composed of a series of independent boards covering each basin, placed at different levels and so constructed and arranged that the openings therein shall be in each case the same distance above the level of the corresponding basin in the trough. 3rd. In a water closet, a trough composed of detachable sections so constructed and arranged that any number of said sections may be joined together, each section being formed into a series of basins located at different levels, and curved upon the bottom, substantially in the manner described, said basins being each so connected with each other by curved surfaces that a ridge or elevation is formed between the same.

No. 29,431. Machine for Barbing and Winding Wire. (*Machine à barbeler et enrouler le fil de fer.*)

Ferdinand Philips, Philadelphia, Penn., U.S., 3rd July, 1888; 5 years.

Claim.—1st. In a machine for barbing wire, the combination of parallel driving shafts with barbing-rolls corresponding in number to the rows of indentations to be produced on the wire, and having their teeth formed in surfaces corresponding in angular position to that of the rows of indentations to be formed. 2nd. Barbing rolls constructed and adapted for use substantially as specified, having their teeth formed with faces *m*, substantially in a plane passing through the axis of the roll, and their faces *n* tapering gradually upward. 3rd. Barbing-rolls constructed and adapted for use substantially as specified, having their teeth formed with faces *m*, substantially in a plane passing through the axis of the roll, their faces *n*, tapering gradually upward, and crowns *g, h*, consisting of a portion of the originally roll surfaces. 4th. In a machine for barbing wire, the combination, with parallel driving shafts, of barbing rolls or

dies having teeth formed in their peripheral edges and adapted to be secured in pairs or sets upon the driving shafts so as to form dies for barbing the wire, substantially as shown and described. 5th. In combination with barbing mechanism, the winding roll having driving mechanism adapted to give the reel surface a normal speed slightly greater than the speed of the barbing roll surface, said driving mechanism having a yielding frictional connection with said reel, substantially as specified. 6th. A wire-winding reel having in combination, the rim *O*, and flange *O*, rigidly attached to the hub *N*, the removable flange *P, P*, and wedges *R* extending through the flange *P* across the face of the reel. 7th. A wire-winding reel having in combination, the rim *O*, and flange *O*, rigidly attached to the hub *N*, and having the tapering projections *O*, formed on the reel-face, the removable flange *P, P*, and wedges *R* extending through the flange *P* across the face of the reel.

No. 29,432. Device for Making Ice Roads.

(*Appareil pour faire les chemins de glace.*)

Daniel J. Arpin, Grand Rapids, Wis., U.S., 3rd July, 1888; 5 years.

Claim.—1st. A device for making ice roads that comprises a sled having hollow runners, interiorly provided with deflecting plates, and means substantially as described for heating said runners, whereby snow may be melted by contact therewith, as set forth. 2nd. A device for making ice roads that comprises a sled having hollow runners, interiorly provided with deflecting plates, a heater arranged on the sled, pipes connecting the runners and heater, and a smoke stack also connected to the runners, whereby the products of combustion are drawn through said runners to heat the same, substantially as set forth. 3rd. A device for making ice roads that comprises a sled having hollow runners, a heater arranged on the sled, pipes connecting the runners and heater, a smoke-stack also connected to the runners, and a blower for increasing the draft, substantially as set forth. 4th. A device for making ice roads that comprises a sled having hollow runners, a heater arranged on the sled, pipes connecting the runners and heater, a smoke-stack also connected to the runners, a blower arranged in the smoke-stack, and a shaft having a bolt connection with the blower, and provided with spokes that come in contact with the surface over which the sled passes to impart motion to said shaft, substantially as set forth. 5th. A device for making ice roads that comprises a sled having hollow runners, a heater arranged on the sled, pipes connecting the runners and heater, a smoke-stack also connected to the runners, a blower arranged in the smoke-stack, a shaft arranged to have vertical play in its bearings, and belt geared to the blower, spokes arranged on the shaft to come into contact with the surface over which the sled passes to impart motion to said shaft, and a suitably arranged bolt-tightener, substantially as set forth. 6th. A device for making ice roads that comprises a sled having hollow runners open at their rear ends, and provided at their front ends with draft openings, a smoke-stack connected to the runners, and cut-off plates for the rear ends, and draft openings of said runners, substantially as set forth. 7th. A device for making ice roads that comprises a sled having hollow runners open at their rear ends, and each runner provided with a top opening, front draft openings, and cut-off plate for its open rear end, substantially as set forth.

No. 29,433. Live-Poultry Car.

(*Char à volailles vivantes.*)

William P. Jenkins, Chicago, Ill., U.S., 3rd July, 1888; 5 years.

Claim.—1st. A live poultry car, comprising in combination a car divided internally into tiers of compartments opening laterally of the car, and a longitudinal aisle within the car separating the tiers of compartments into two sets, normally closed to and controllably accessible from the aisle, substantially as described. 2nd. A live-poultry car comprising in combination a car *A*, divided internally into tiers of compartments opening laterally of the car, and provided with doors *E*, a longitudinal aisle *C* within the car separating the tiers of compartments into two sets *B* and *B*, and doors *F* for the said compartments opening into the aisle *C*, substantially as described. 3rd. A live-poultry car comprising in combination a car *A* divided internally into tiers of compartments having their sides formed with open work, substantially as described, and opening laterally of the car doors *E*, for compartment in the open work at opposite sides of the car, a longitudinal aisle *C* within the car, separating the tiers of compartments into two sets *B* and *B*, an open work door *F* for each tier opening into the aisle *C*, and doors *F* in the doors *E*, substantially as described. 4th. A live-poultry car comprising in combination a car *A* divided internally into tiers of compartments opening laterally of the car, and provided with doors *E*, a longitudinal aisle *C* within the car separating the tiers of compartments into two sets *B* and *B*, doors *F* for the said compartments opening into the aisle *C*, and troughs *H* supported in the compartments and removable from, and adjustable into the said compartments from the aisle through the doors *F* when closed, substantially as described. 5th. A live-poultry car comprising in combination a car *A*, divided internally into tiers of compartments opening laterally of the car, a longitudinal aisle *C* within the car separating the tiers of compartments into two sets *B* and *B*, normally closed to, and controllably accessible from the aisle troughs *H* in the compartments, and a stationary water-supply tank *L* provided with means for leading water from it to the compartments, substantially as described. 6th. A live-poultry car comprising in combination a car *A*, divided internally into tiers of compartments opening laterally of the car, a longitudinal aisle *C* within the car separating the tiers of compartments into two sets *B* and *B*, normally closed to, and controllably accessible from the aisle troughs *H* in the compartments, a transverse aisle *C'* crossing the aisle *C*, and a stationary water-supply *L* above the aisle *C* and provided with means for leading water from it to the compartments, substantially as described. 7th. A live-poultry car comprising in combination a car *A*, divided internally into tiers of compartments opening laterally of the car, and provided with doors *E* having staples *m*, a longitudinal aisle *C* within the car, separating the compartments into two sets *B* and *B*, doors for the said compartments opening into the aisle *C*, a vertically reciprocating rod *I* for each tier having hooks *m'* to engage with the staples *m*, and a crank-rod *K* for each rod *I*, con-

nected therewith and extending into the aisle C, substantially as described. 8th. A live poultry car comprising in combination a car A, divided internally into tiers of compartments having hinged drop-decks G and opening laterally of the car, and a longitudinal aisle C within the car, separating the tiers of compartments into two sets B and B', normally closed to and controllably accessible from the aisle, substantially as described. 9th. A live poultry car comprising in combination a car A, divided internally into tiers of compartments having hinged drop-decks G, and hinged supports K for the free ends of the drop-decks, and opening laterally of the car, and a longitudinal aisle C within the car, separating the tiers of compartments into two sets B and B', normally closed to, and controllably accessible from the aisle, substantially as described.

No. 29,434. Steam Shovel. (*Pelle à vapeur.*)

Andrew Moyers, Port Arthur, Ont., 3rd July, 1888, 5 years.

Claim.—1st. The combination of a pivoted inclined way 32, a hinged shovel 40 mounted thereon, a hoisting apparatus comprising a shaft 14, gear 15 and drum 16 connected by a cord 45 to the shovel, and a sliding cross-head 36 connected to the lower end of the inclined way, and operated from the hoisting apparatus, substantially as herein shown and described. 2nd. The combination of a pivoted inclined way 32, a truck 37 mounted thereon, a shovel 40 hinged to the truck, a hoisting apparatus comprising a shaft 14, gear 15 and drum 16 connected to the shovel by a cord 45, and a sliding cross-head 36 connected to the lower end of the inclined way, substantially as herein shown and described. 3rd. The combination, with a bed-plate 10, a horizontal frame 11 pivotally mounted thereon, and a supporting frame 12 pivotally connected to the horizontal frame, of an inclined way 32 pivoted to the supporting frame, a threaded shaft 20, a nut 34 carried by the shaft, a cross-head 36 connected to the nut and to the lower end of the inclined way, a truck 37 mounted upon the way, a shovel 40 connected to the truck, a shaft 14, a gear 15 and drum 16 on said shaft, a cord 45 extending from the drum to the shovel, and means for operating the said drum and shaft, substantially as herein shown and described. 4th. The combination, with a main shaft 19, of fixed gears 20, 21 carried thereby, a threaded shaft 30, two gears 22, 26 loosely mounted thereon, one of which 22 is engaged by the gear 21 of the main shaft, a gear 15 interposed between the other gear 20 of the main shaft, and the other loosely mounted gear 26 of the threaded shaft, a double clutch section 27 mounted between said gears 22, 26, and an operating lever 28, substantially as herein shown and described. 5th. The combination, with an inclined way 22 provided with stops 42, 43, in its upper and lower ends, of a truck 37 mounted upon said way, a shovel 40, and a triple-leaved hinge 39 connected to the shovel and to the truck, substantially as herein shown and described.

No. 29,435. Combined Railway Buffer and Automatic Coupling. (*Tampon et attelage automatique de chemin de fer.*)

Joseph W. Oakman, Brooklyn, N. Y., U. S., and Joseph C. Oakman, Sidney, N. S. W., (assignees of John Brown, Redfern, N. S. W.), 3rd July, 1888, 5 years.

Claim.—1st. A combined railway buffer and automatic coupling, in which a helical barb or head is presented to a slot in an approaching buffer or coupling, is partially revolved by said slot passes through said slot and recovers its normal position, substantially as herein described and explained. 2nd. A combined railway buffer and automatic coupling having a slot in its head, and a helical barb or head projecting from said face and free to revolve, and both adapted to engage with a barb or head, and a slot respectively in another buffer coupling of similar construction, substantially as herein described and explained. 3rd. The combination and arrangement, with a helical barb or head free and adapted to partially revolve, of a stop and counter-balance to regulate the extent of motion, substantially as herein described and explained. 4th. A combined railway buffer and automatic coupling, consisting essentially of the head A having slot A', the barb B with helical head B', and the counter balance C with stop C' and weight C'', substantially as herein described and explained and as illustrated in the drawings.

No. 29,436. Apparatus for Treating Vegetable Substances for Making Paper Stock. (*Appareil de traitement des matières végétales pour la pâte à papier.*)

Adelbert Chambers, John A. Manning and William M. Peckham, Troy, N. Y., U. S., 3rd July, 1888, 5 years.

Claim.—1st. The combination, with a digesting-reservoir provided with a lower steam-supply pipe or pipes, of an auxiliary reservoir connected with said digesting-reservoir by one or more pipes leading exteriorly from its upper end to the upper interior of the auxiliary reservoir, and one or more pipes connecting said reservoirs at or near their lower ends, the latter pipes being severally supplied with a pump and valves, substantially as described. 2nd. An apparatus for treating vegetable substances for making paper-pulp, consisting of a close reservoir provided with an upper float waste dome, lower central steam-supply pipe, and inlet liquor-pipes connected with the outlet liquor pipe or pipes and supplied with a pump or pumps, substantially as described. 3rd. The combination, with a digesting-reservoir provided with a lower steam-supply pipe, of an auxiliary reservoir provided with an upper steam-supply pipe, and connected at its lower end with the lower end of said digesting-reservoir by pipes, one or more of which are supplied with a pump, substantially as described. 4th. In apparatus for digesting vegetable and other substances, the combination, with the digesting-reservoir, of a perforated blow-off pipe located in the upper part of its interior, and provided with valved connections leading exteriorly of the reservoir, substantially as described. 5th. The combination, with a digesting-reservoir, of an auxiliary reservoir connected therewith by a valved pipe supplied with a pump, and a perforated blow-off pipe having valved connections leading exteriorly of the reservoir, substantially as described.

ed. 6th. The combination, with a digester reservoir having steam and pump-supply pipes of a blow-off pipe located in its upper part, an exterior condensing reservoir and valved connections leading from said blow-off pipe to said condenser, substantially as described.

No. 29,437. Wash Stand Bowl. (*Cuvette de lavabo.*)

Charles I. Kellogg, Washington, D. C., and R. W. Williams, Roxbury, Mass., assignees of Nathan O. Bond, Fairfax Court House, Va., U. S., 3rd July, 1888, 5 years.

Claim.—1st. The combination, with a bowl having a discharge opening in its bottom, of an adjustable elastic cover suspended outside of said bowl, and swinging in approximately the plane of said opening, said cover being adapted when in one position to close said discharge opening. 2nd. The combination, with a bowl having a discharge opening in its bottom, of an elastic cover lying outside of said bowl, and revoluble about a vertical axis, and an adjustable elastic support on which said cover is mounted, whereby said cover may be brought into position to close said discharge opening, and may in such position be pressed against the bowl only by its own elastic force and that of said support. 3rd. The combination, with a bowl having a discharge opening in its bottom, of an adjustable elastic cover lying outside of said bowl, and adapted when in one position to close said discharge opening, and moving substantially in the plane of said opening, a longitudinal reciprocating rod attached to said cover and imparting its own reciprocal motion thereto, and means, substantially as shown and described, for imparting motion to said rod, substantially as and for the purpose set forth. 4th. The combination, with a bowl having a discharge opening in its bottom, of an elastic ball lying below said discharge opening, a swinging rod on which said ball is mounted, the plane of motion of said rod being approximately tangent to said bowl, and means, substantially as shown and described, for actuating the free end of said rod and bringing said ball into or withdrawing it from a position immediately below and in contact with the walls of said opening, substantially as and for the purpose set forth. 5th. The combination of a bowl B having an opening b in its bottom, the rod c swinging in a plane substantially perpendicular to the axis of said opening the ball C, mounted on the free end of said rod, the guide D, and means, substantially as shown and described, for moving the free end of the rod c, substantially as and for the purpose set forth. 6th. The combination of the bowl B having the discharge opening b in its bottom, the swinging rod c oscillating in a plane intersecting the axis of said opening, and the elastic ball C mounted thereon, the rotating rod H and the lever G rigidly mounted thereon, and the rod F connecting the free end of the lever G with the free end of the rod c, whereby the rotation of the rod H actuates the free end of the rod c, substantially as and for the purpose set forth. 7th. The combination, with the bowl B having an opening b in its bottom, of the swinging rod c oscillating about a vertical axis, the ball C mounted thereon, the nut E having sockets e in its walls, the rotating rod H and lever G, and the rod F having one of its ends connected with the free end of the lever G, and provided at its opposite but unacted end with inwardly turned points entering the sockets e in the nut E, substantially as and for the purposes set forth.

No. 29,438. Seal Lock. (*Serrure à cachet.*)

The Trans-Continental Car Lock and Seal Company, (assignee of John W. Norris, the assignee of Charles E. Davis), Chicago, Ill., U. S., 3rd July, 1888, 5 years.

Claim.—1st. In a seal-lock, the combination of a lock-frame arranged and adapted to sustain in operative position a frangible sealing-plate, a suitably formed and perpendicularly and axially movable bolt also sustained by said frame, adapted, as set forth, to secure a link, hasp, or strap upon a staple or keeper, and means for securing said bolt vertically in such position from which it cannot be withdrawn or removed without being primarily turned upon its axis and thereby caused to come in contact with, and demolish the frangible sealing-plate when in operative position, substantially as shown and described. 2nd. In seal-locks, the combination of a lock frame arranged and adapted to sustain in operative positions a frangible sealing-plate, a perpendicularly and axially movable bolt also sustained by said frame, so formed as to admit of the locating of the sealing-plate upon a plane perpendicularly within the arc of travel of its largest diameter, and devices, substantially as described, adapted to secure the bolt perpendicularly in position from which it cannot be removed without being first turned upon its axis and thereby caused to engage with, and effect destruction of the sealing-plate, substantially in the manner and for the purpose shown and described. 3rd. In seal-locks, the combination of the lock-frame, a shell forming part thereof adapted to sustain in fixed position a frangible sealing-plate D, an axially and perpendicularly inmovable hasp, link, or strap securing bolt having an irregular form, substantially as shown, adapted when turned upon its axis to engage with and effect destruction of the sealing-plate, and a tumbler or spring arranged to suitably engage with said bolt and to prevent perpendicular movement thereof unless primarily moved upon its axis, substantially as shown and described.

No. 29,439. Machine for Reducing Railroad Rails. (*Machine à réduire les rails de chemins de fer.*)

Sidney McCloud, Chicago, Ill., U. S., and Charles E. Doolittle, trustee for the Ontario Rolling Mill Company, Hamilton, Ont., 3rd July, 1888, 5 years.

Claim.—1st. In a machine for reducing railroad rails, a pair of rolls for effecting the pass substantially as at P, said rolls having grooves in which the head of the rail is compressed, and having an unobstructed open space at the side of said grooves wherein the lateral expansion of the metal can freely occur, substantially as described. 2nd. In a machine for reducing railroad rails, a pair of rolls for effecting the pass, substantially as at P, the one roll having a broad

shallow groove in which one side of the head of a rail is compressed, and the other roll having a deeper groove to receive the opposite side of the head of the rail, substantially as described. 3rd. In a machine for reducing railroad rails, a pair of rolls for effecting the pass, substantially as at P, the one roll having a broad shallow groove in which one side of the rail-head is compressed, and having a broad rib to bear upon the web of the rail, and having a deep groove with inclined face to receive and bond one of the rail flanges, and the other roll having a deep groove to receive one side of the rail head, and having a groove of less depth than one of the rail flanges, to receive and compress said flanges, substantially as described. 4th. In a machine for reducing railroad rails, a pair of rolls for effecting the pass, substantially as at Q, one of said rolls having a groove to receive one side of the partially compressed rail-head, and the other of said rolls being provided with a rib opposite said groove of the other roll, said rolls being formed with a broad and unobstructed space adjacent the tread of the rail-head wherein said head may be freely extended, substantially as described. 5th. In a machine for reducing rails, a pair of rolls for effecting the pass, substantially as at Q, said rolls having grooves to receive and compress the opposite flanges of the rail, said grooves being out of alignment with each other, substantially as described. 6th. In a machine for reducing railroad rails, a pair of rolls for effecting the third or following pass, substantially as at R, etc., one of said rolls having a groove to receive the partially compressed rail-head, and having a groove to receive one of the partially compressed rail flanges, and the other of said rolls having two ribs, one opposite each of said grooves, substantially as described. 7th. In a machine for reducing railroad rails, the combination, with a pair of compressing rolls, of diagonal guides for causing the passage of the blank obliquely through the rolls, substantially as described. 8th. In a machine for reducing railroad rails, the combination, with a set of three rolls having flat portions for compressing the blank of two sets of diagonal guides, one of said sets for causing the passage of the blank obliquely between the middle and upper rolls, and the other of said sets for causing the passage of the blank obliquely between the middle and lower rolls, substantially as described.

No. 29,440. Semaphore Signalling Apparatus. (*Appareil à signal sémaphore.*)

Frederick Stitzel, Charles Weinedel, Adolph Reutlinger, Moses Schwartz, Otto E. Mueller and Henry J. Egelhoff, Louisville, Ky., U. S., 4th July, 1838. 5 years.

Claim.—1st. The combination of a signalling blade pivoted to go to danger by gravity, a motor vibrating by a change of liquid from chamber to chamber by heat, and its return by gravity, and electrical holding devices, substantially as set forth. 2nd. In a thermo-motor for a semaphore signalling device, the combination, with two pivoted and hermetically sealed chambers, two pipes connecting the chamber at opposite points, and volatile liquid placed in the chambers, of a heat generator adapted to create vapour in one chamber, and drive the liquid into the other chamber, and vibrate the joined chambers by the preponderance of weight thus created, substantially as set forth. 3rd. In a thermo-motor for a semaphore signalling device, the combination, with two pivoted hermetically sealed conical chambers provided with a volatile liquid, two pipes oppositely located, and attached by their ends to form communicating passages between the chambers, one chamber having two heads with an intervening space, the inner head being perforated to allow liquid to enter this space, of a heat producer located in proximity to the lower chamber to create vapour, and expel the liquid from this lower chamber into the upper chamber, to vibrate it to or near a horizontal plane, substantially as set forth. 4th. In a semaphore signalling device, the combination, with a visual signalling blade pivoted and weighted to cause its vibration and outward extension, of electromagnets and a thermo-motor that co-acts with the gravitating blade to set it for danger or safety signals, the motor operating by the expulsion in volume of liquid from one chamber to another, and its return by gravity to the chamber from which it was expelled, substantially as set forth. 5th. In a semaphore signalling device, the combination, with a visual signalling blade pivoted and weighted to vibrate from a vertical position by gravity, of two sets of electromagnets, their armature bars and a motor that derives power from the vapourizing of a portion of its liquid contents, the expulsion of the major portion of the liquid from one chamber to another, and its return to the chamber from which it was expelled by gravity, substantially as set forth. 6th. In a semaphore signal, the combination, with a visual signalling blade adapted to fall to a horizontal position by gravity, of two sets of electromagnets, one set adapted to release the blade and allow it to fall, and the other set effecting an elevation of the blade, substantially as set forth. 7th. In a semaphore signal, the combination, with a signalling blade adapted to fall to a horizontal position by gravity, and a motor, of two sets of electromagnets, one set adapted to release the blade and allow it to fall, and the other set adapted to release the motor, which latter returns the blade to its upright position, substantially as set forth. 8th. In a semaphore signalling device, two sets of electromagnets having weighted armature bars pivoted to rest on the poles of the magnets by force of gravity, and a pivoted hook plate adapted to have hooked engagement with the armature bar of the dominant magnets, to retain this bar in place on the poles of these magnets by its enforced contact of the hook plate with the armature bar of the set of magnets that are charged with electricity, substantially as set forth. 9th. In a semaphore signal, the combination, with a signal blade adapted to fall by gravity, and a depending sliding rod for turning said blade to an upright position, of a motor, an electromagnet, an armature bar for locating said motor against movement, and a second electromagnet having an armature bar adapted to hold the signal blade in an upright position, substantially as set forth. 10th. In a semaphore signal for the railway block system of signalling, the combination, with a signal blade adapted to fall to a horizontal position by gravity, of two sets of electromagnets, their armature bars and latches, and a motor, one set of magnets adapted to hold the signal blade in a position to indicate "safety," and the other set holding the motor in proper adjustment to effect an elevation of the signal blade to a position indicating "safety" when the train leaves the block, substantially as set forth.

No. 29,441. Trace Fastening.

(*Embout de palonnier.*)

Julius S. Clark, Rockford, Ill., U. S., 4th July, 1838; 5 years.

Claim.—1st. A trace fastening consisting of the ferrule 2 having an end piece 5, and tongue or tongues 6 formed integral, substantially as set forth. 2nd. A trace fastening consisting of the ferrule 2 having an end piece 5, and tongue or tongues 6 formed integral, said ferrule provided with a trace fastening, substantially as set forth. 3rd. A trace fastening consisting of the ferrule 2 having an end piece 5, tongue or tongues 6 and lips 7 formed integral, substantially as set forth.

No. 29,442. Side Spring Buggy and Carriage Gear. (*Train de voiture à ressorts de côté*)

John B. Armstrong, Guelph, Ont., 4th July, 1838; 5 years.

Claim.—1st. In a side spring buggy or carriage, the curved tapered springs C, flattened at their upper bearings G, so as to form a bed for the body sills F, to which they are directly attached, and also so attached at their other ends, to the head-block H and rear axle I, as to be in line with the said body sills, substantially as described and for the purpose specified. 2nd. In a side spring buggy or carriage, the combination of the curved tapered side springs C, body sills F, head block H, rear axle I, front axle L, hangers e and bifurcated reaches A, substantially as and for the purpose specified. 3rd. In a side spring buggy or carriage, the combination of the curved tapered side springs C, body sills F, head block H, rear axle I, front axle L, compensating rubber cushion a, hangers e and bifurcated reaches A, substantially as specified.

No. 29,443. Draft Attachment for Waggon.

(*Disposition aux volées de derrière des wagons.*)

John G. Unsoeld, Chicago, Ill., U. S., 4th July, 1838; 5 years.

Claim.—In a draft equalizer, the combination of the draw bar C, sliding in the guide bracket A and carrying the evener B, the rearwardly extending V-shaped draw link E, pivoted to the draw bar C centrally, and duplicate links and spring devices G, g, ot, oz, connected to the rear ends of the link E and axle F, the parts being arranged in the manner and for the purpose set forth.

No. 29,444. Poultice Pan. (*Poñon à cataplasme.*)

Kate Seanton, New York, N. Y., U. S., 4th July, 1838; 5 years.

Claim.—In a poultice pan, the combination, with compartment B provided with pipe f and removable cap g, of compartment C, provided with slide l and communicating with compartment B, and cover D, substantially as shown and described.

No. 29,445. Button Boot. (*Bottine boutonnée.*)

John Ritchie, Quebec, Que., 4th July, 1838; 5 years.

Claim.—In a button boot made with one large and one smaller quarter, and having a buttoning fly or flap adapted to button up or over the smaller quarter, the combination therewith of an attached inner lining fly beneath the buttoning fly or flap, and adapted to lace up the side of the smaller quarter within the boot's row of buttons, and extending from or near the instep to or near the ankle, substantially as and for the purposes herein set forth.

No. 29,446. Two-Wheeled Vehicle.

(*Voiture à deux roues.*)

John W. Phillips and Frank C. Staley, Kalamazoo, Mich., U. S., 4th July, 1838; 5 years.

Claim.—1st. The combination of the axle, spring, spring bar and a fulcrumed body having the rearwardly extended brace arms between which the ends of the spring bar are attached, substantially as set forth. 2nd. The combination of the wheeled axle, the thills having the single cross bar, the hanger-supports which also form braces to the thills, said supports being attached to the cross-bar extending across the angle of the cross-bar and thills, thence down the bend of the thills and attached thereto, the fulcrumed body spring and the hangers jointly attached to the lower end of said support, substantially as set forth.

No. 29,447. Flue Cleaner. (*Nettoyeur de tuyau*)

William H. Thomas, Detroit, Mich., U. S., 4th July, 1838; 5 years.

Claim.—1st. The combination, with the stem and the adjusting nuts, of the inner elliptical spring bearing against the inner springs at or near the center of its length, and both of said springs secured to said nuts, substantially as described. 2nd. The combination of the outer spring E, the inner elliptical springs F, brace spring E at or near its longitudinal center, the conical nuts D, nuts I and washers C, all constructed, arranged and operating substantially in the manner and for the purpose, as described.

No. 29,448. Churn Motor. (*Moteur de baratte*)

Joseph W. Jack, New Glasgow, N. S., 4th July, 1838; 5 years.

Claim.—The combination, with the rocking chair, of the frame E, shafts G, H, I and gear wheels J, K, L, pawls O, P and power wheel N, substantially as set forth.

No. 29,449. Baking Pan. (*Cassrole.*)

Edward F. Green and Frank H. Hendrix, Bath, N. Y., U. S., 4th July, 1838; 5 years.

Claim.—The pan A and false-bottom B, having handle C, substantially as and for the purpose hereinbefore set forth.

No. 29,450. Apparatus for Freeing, Stretching or Holding Boots and Shoes. (*Appareil pour emboucher et étirer ou assouplir les chaussures.*)

William W. Watts, Athlone, Ireland 4th July, 1888; 5 years.

Claim.—1st. Apparatus for stretching or holding boots and shoes, consisting of a sole plate carrying claws to engage with the toe, and a movable grip to engage with the heel of the boot, and means for operating such grip, as shown and described. 2d. In apparatus for stretching or holding boots and shoes, the combination, with the sole plate carrying claws to engage with the toe, and a movable grip to engage with the heel of the boot, of a clamping screw carried in an extension from sole plate and working in conjunction with a biting surface on the plate to attach same to a table or other support, as shown and described.

No. 29,451. Two-Wheeled Vehicle.

(*Voiture à deux roues.*)

R. Arthur Stone, (assignee of Benjamin F. Rix), Kalamazoo, Mich., U.S., 4th July, 1888; 5 years.

Claim.—In a vehicle, the spring-support comprising, as an integral whole, the upright body part, the right angled clip plate, the upper turned eyed end, and the lug below said end extending laterally and thence at right angles, substantially as set forth.

No. 29,452. Corset Fastener. (*Agrafe de corset.*)

S. Greor Doran and William Gibson, New York, N.Y., (assignees of Benjamin R. Davenport, Chicago, Ill.), U.S., 4th July, 1888; 5 years.

Claim.—1st. In the corset fastening herein described, a catch loop and a catch, in combination with a locking loop, the bar of which wedges between the corset steel and the catch, whereby said catch is locked in engagement with the catch loop, substantially as described. 2d. In the corset fastening herein described, a catch loop and a catch adapted to engage therewith, in combination with an elastic strap and a loop thereon, adapted to engage and lock the catch and catch loop together, substantially as described.

No. 29,453. Hot Water Boiler.

(*Chaudière de calorifère à eau.*)

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

Claim.—In a hot water boiler of the class described, the combination, with the top returning pipes M, M, passage X and water flues Y, of the water leg B, having opening P and Q, partitions D, E, and fire box A, the whole substantially as described and for the purposes set forth.

No. 29,454. Art of Enlarging Metallic Tubes and Apparatus therefor. (*Moyen d'élargir les tubes métalliques et appareil pour cet objet.*)

Max Mannesmann, Remscheid, Germany, 6th July, 1888; 5 years.

Claim.—1st. For the production and enlargement of tubes by one set of diagonally acting rolls or discs, in conjunction with a mandrel having a portion of their working surfaces convergent and the remainder divergent, so constructing and arranging the said rolls or discs that the lines x, x , drawn along the said divergent working surfaces, meet at or outside the apparent point of intersection of the lines y, y , which are hereinbefore referred to as the vertical planes of the axes of the rolls or discs, substantially as hereinbefore described and shown at Fig. 1, 2, 6 and 7 of the accompanying drawings, and for the purposes set forth. 2nd. The employment for the purpose of producing tubes and enlarging the same at one operation, of two sets of diagonally acting rolls, the rolls for effecting the enlargement of the tubes being so formed and arranged that the lines x, x , drawn along their divergent working surfaces, meet at or outside the point of intersection of the lines y, y , which are hereinbefore referred to as the vertical planes of the axes of the rolls, a mandrel being employed in conjunction with the said rolls, substantially as hereinbefore described and shown at Fig. 10 of the accompanying drawings, and for the purposes set forth. 3rd. The employment for the purpose of enlarging tubes previously produced, of one set of diagonally acting rolls in conjunction with a mandrel, the lines x, x , drawn along the divergent working surfaces of the rolls meeting, at or outside of the apparent point of intersection of the lines y, y , which are hereinbefore referred to as the vertical planes of the axes of the rolls, substantially as and for the purposes hereinbefore described. 4th. The employment for the purpose of enlarging tubes previously produced by rolls, in such a manner that a twist has been imparted to the fibre of the metal of one set of diagonally acting rolls, in conjunction with a mandrel, the lines x, x , drawn along the divergent working surfaces of the rolls, meeting at or inside of the apparent point of intersection of the lines y, y , which are hereinbefore referred to as the vertical planes of the axes of the rolls, the said rolls being inclined and revolving in opposit directions as compared with the rolls employed in the production of the tube, substantially as hereinbefore described and illustrated by Figs. 13, 14, 15 and 16 of the accompanying drawings, and for the purposes set forth. 5th. The improvement in the art of enlarging the size of a tube or hollow metallic ingot or blank, which consists of progressively compressing and simultaneously drawing the shell of a metallic tube or hollow blank upon and over the surface of a conical or conoidal mandrel, by means of diagonally acting paraboloidal or bevelled disc rolls, the working faces of which impinge upon different sides of the hollow blank or tube, and along portions of their lines of impingement adjacent to the cone of the mandrel diverge from each other, substantially as hereinbefore described. 6th. In apparatus for enlarging the sizes of metallic tubes or hollow ingots, or for transforming a solid blank or ingot into a

tube and then enlarging said tube, the combination of a mandrel with diagonally acting paraboloidal or bevelled disc rolls, the opposed portions of the working faces of which adjacent to the mandrel are divergent, substantially as and for the purposes hereinbefore set forth. 7th. Diagonally acting reducing rolls, perforated and adjusted for developing a tubular formation in a solid metallic blank or ingot passed endwise between their working faces, in combination with two diagonally acting enlarging paraboloidal or bevelled disc rolls arranged on different sides of a conoidal mandrel, and having opposed portions of their working faces divergent as hereinbefore described, and shown in the accompanying drawings. 8th. In diagonal rolling apparatus, two paraboloidal or bevelled disc rolls, substantially as described, and the opposed portions of the working faces of which converge and then become divergent, in combination with an interposed mandrel, as and for the purposes hereinbefore set forth. 9th. The improvement in the art of producing and enlarging tubes from solid billets or blanks, which consists in first progressively reducing the diameter of the blank by the impingement upon it of diagonally acting reducing rolls having their working faces of portions thereof convergent, and then aided by the impingement upon it of diagonally acting paraboloidal or bevelled disc rolls having their working faces or portions thereof divergent, pressing it against a lower the surface of a mandrel placed between the divergent working faces of said rolls, whereby during a single passage between the rolls the blank is made to resume the form of a tube, and such tube is gradually enlarged, substantially as hereinbefore described. 10th. In diagonal rolling apparatus, the combination of a mandrel with two paraboloidal or bevelled disc rolls between which the mandrel is interposed, the said rolls being mounted upon converging shafts, and having the outer portions of their working faces in the form or approximately in the form of frustra of cones, the apices of which intersect, or nearly intersect, a line which is perpendicular to the axial line of the mandrel, and which is at or near the line of intersection of those planes passing through the axes of the rolls, which have their intersection perpendicular to the axial line of the mandrel, as and for the purpose hereinbefore set forth. 11th. The process of producing tubes from solid or hollow blanks, by passing the same between diagonally acting rolls in such a manner that they are first acted on by the converging surfaces of the rolls, and then pass between the divergent surfaces, in connection with which is arranged a mandrel, whereby the twist imparted to the fibres of the metal by the converging surfaces is preserved or increased, substantially as hereinbefore described. 12th. In diagonally acting rolling mills, two or more rolls, each of which is carried between two bearings, and has its working surface or a portion thereof divergent along the line of impingement upon the blank, and has such divergent portion either cylindrical or of the largest diameter at the edge of final contact, substantially as hereinbefore described. 13th. The combined process of producing and enlarging tubes by means of two sets of diagonally acting rolls, the first set giving to the metal a twist of fibre, such twist being either preserved or increased during the passage of the tube through the second set of rolls, substantially as hereinbefore described.

No. 29,455. Sectional Pulley.

(*Poulie sectionnelle.*)

Atwater E. Brackett, Kingston, Ont., and Gardner T. Eames, Racine, Wis., U.S., 6th July, 1888; 5 years.

Claim.—1st. A sectional pulley having a divided hub C provided with raised bearings D, as set forth. 2nd. A sectional pulley having a divided hub C, and arms B integrally cast with each section, said arms provided with points K and secured to rim A of the pulley by bolts M, as set forth. 3rd. A pulley having a sectional rim secured to radial arms enlarged at their ends, and having points K, said sections having disks L at the joint, as set forth. 4th. A sectional pulley consisting of a divided rim A secured to arms B by bolts M, said arms cast integrally with a half hub C, and said half hubs secured together by bolts G, as set forth. 5th. The combination, in a sectional pulley having a divided hub provided with bearings D, of the removable and interchangeable bushings E, as set forth.

No. 29,456. Manufacture of Steel and Iron.

(*Fabrication de l'acier et du fer.*)

George G. Mullins, Los Angeles, Cal., U.S., 6th July, 1888; 5 years.

Claim.—The process of purifying and improving iron or steel, by the introduction to the melted mass of metal either from crude ore or cast metal, at the proper degree of heat, of pulverized silica, which consists in adding silica when the metal is at a suitable white heat, then subsequently working the mass by puddling, or otherwise, in any form of furnace whatever, then finally working the metal in the usual manner, substantially as and for the purpose described.

No. 29,457. Cooking Stove. (*Poêle de cuisine.*)

Joseph C. Thibeault, Victoria, B.C., 6th July, 1888; 5 years.

Retour.—La combinaison, dans un poêle de cuisine, de foyer A ayant les côtés et le fond en grillage B, le dessous en grillage mobile, et les registres C, mis par la clef à bascule D, avec les fourneaux E, placés de manière à ce que la chaleur passe tout autour, les réchauds F, le cendrier G, le conduit inférieur H, et le tuyau postérieur I et le cimet entre le tuyau postérieur et le foyer, le tout arrangé tel que décrit et pour les fins indiquées.

No. 29,458. Treatment of Bones and animal Waste or Refuse generally, for rendering the same more suited for Fertilizing purposes, and for Obtaining Gelatine, Glue and Size. (*Traitement des os et des matières animales en général pour les convertir en engrais et en tirer la gélatine et la colle.*)

Amos H. Hobson, Westminster, Eng., 6th July, 1888; 5 years.

Claim.—1st. The herein described process of treating bones and animal refuse or waste for the purpose of rendering the same more suited for fertilizing purposes, which process consists in digesting the bones, etc., at a temperature below boiling point in an alkaline solution of sufficient strength, and for a sufficient time to dissolve the nitrogenous and investing membranous matter, and bring the same into a more readily assimilable form, as described. 2nd. The herein described process of treating bones and other animal refuse or waste for the purpose of extracting gelatine, glue or size, and leaving a residue fit for use as a fertilizer which process consists essentially in digesting the bones, etc., in an alkaline solution of such strength at a temperature below boiling point for such a length of time as to dissolve a greater or less portion of the nitrogenous and investing membranous matter, according as glue, gelatine or size is required, and separating and concentrating the solution, as herein described. 3rd. The herein described process of treating the residue from the manufacture of glue, gelatine, or size, herein described, which consists in digesting it in a strong alkaline solution, so as to completely dissolve the remaining nitrogenous matter and bring the same into a more readily assimilable form, as described.

No. 29,459. Soluble Food for Infants and Invalids. (*Aliment soluble pour les enfants et les malades*)

John Camrick, New York, N. Y., U. S., 6th July, 1888; 5 years.

Claim.—1st. A dry powdered milk-wheat food compound, in which the casein of cow's milk is peptonized and partially digested and thus brought to the same soluble form as human milk, so that it will not coagulate and form indigestible curds in the child's stomach. 2nd. A soluble food devoid of malt, composed of peptonized and partially digested milk and flour, in which the starchy portion is converted into soluble starch and dextrine. 3rd. The soluble food compound in dry form, composed of about equal proportions of milk deprived of water, and having the casein peptonized and partially digested, so as to render it in digestibility like human milk and flour, in which the starchy portion is converted into soluble starch and dextrine. 4th. Soluble food composed of partially digested milk and flour, having the starchy portion converted into soluble starch and dextrine, reduced to a dry powdered form. 5th. The process of manufacturing soluble food, which consists in converting the starchy portion of the flour into dextrine and soluble starch, and partially digesting milk with a suitable digestive ferment at the proper temperature, then arresting the digestive process by increasing to a temperature of suitable degree to stop the action of the digestive agent, then concentrating the milk and mixing it with the prepared flour.

No. 29,460. Apparatus for Subjecting Textile Material to the Action of Fluids for Washing, Dyeing, Bleaching and other Processes. (*Appareil pour soumettre les matières textiles à l'action des fluides pour le dégraissage, la teinture, le blanchiment et autres procédés.*)

Carl A. G. Schmidt, Langensalza, Prussia, 6th July, 1888; 5 years.

Claim.—1st. An apparatus for washing, dyeing, or otherwise treating textile materials with fluids wherein one or more cylindrical or otherwise shaped receptacles A, contained in a vat B, charged with fluid has or have a perforated or permeable bottom beneath which a vane wheel F is made to revolve, whereby a continuous circulation of the fluid through the textile material is effected, substantially as herein described. 2nd. In apparatus such as is referred to in the preceding claim, constructing the vat B with an inwardly rounded upper edge, and providing tunnels G over the receptacles A, in order to prevent the splashing over of the liquid, and to lead the same into the receptacles. 3rd. In apparatus such as is referred to in the first claim, providing the top of the receptacles for the textile material with tightly fitting covers, for the purpose of drawing off the liquid from the material by the exhausting action of the vane-wheel, in order afterwards on opening the receptacle again, or on replacing the said cover by permeable ones to draw warm air through the materials by means of the vane-wheel for the purpose of drying them, substantially as herein described. 4th. The apparatus such as is referred to in the first claim, effecting the introduction of the liquid with which the textile materials are to be treated through a pipe C, at the side of the vat B, and communicating with the bottom thereof at D, whereby an energetic mixing of the entering liquid is effected by the revolving vane wheel, substantially as herein described.

No. 29,461. Friction Clutch.

(*Embrayage à friction.*)

Helen C. Crowell, Erie, Penn., U. S., 6th July, 1888; 5 years.

Claim.—In a friction clutch having reversely moving jaws, and a lever for moving such jaws pivoted upon an arm moving with the shaft, the combination, with such lever, and another lever for moving the first-named lever also moving with the shaft, of an inclined piece interposed between said two levers and provided with means for adjustment, substantially as described.

No. 29,462. Sheet Metal Structure, Sheets Employed in such Structure and Means for Securing or Fastening them together. (*Bâtisse de métal en feuille, feuilles employées dans telle construction et moyens d'assujétir ces feuilles.*)

William Orr and Peter S. Brown, Glasgow, Scotland, 6th July, 1888; 5 years.

Claim.—1st. In a sheet metal structure, the combination of the tube c having slot et throughout its length, into which is passed the

the bent edge b of two adjacent roofing sheets a, and the wedge or clip having a part d by which the edges b are spread within the tube, a neck passing out through the slot, and a part g for the application of a key, substantially as described. 2nd. In a sheet metal structure, the combination of the tube c having slot et throughout its length, into which is passed the bent edges b of two adjacent sheets a, and the wedge or clip having a part d by which the edges b are spread within the tube, a neck passing out through the slot, a turning part g, and a screwed part i securing the structure to purline bars or supports h, substantially as described. 3rd. In a sheet metal structure, the combination of the tube c, constructed as set forth, the sheets a, with edges bent as set forth, and the wedge or clip having a part d by which the bent edges b are spread within the tube, a neck passing out through the slot, and a palm k for bolting the structure to purline bars or supports h, substantially as described. 4th. In a sheet metal structure, the combination of a tube formed as set forth, metal sheets a having bent edges secured i in the tube by rail-shaped wedges or clips n and brackets s by which the structure is secured to supports, substantially as described. 5th. In a sheet metal structure, the combination of a tube formed as set forth, metal sheets having bent edges inserted in the tube and secured by squeezing or hammering the edges of the slot until they grip the sheets and brackets s, by which the structure is secured to supports, substantially as described. 6th. In a sheet metal structure, the fastener consisting of a tube c having a slot et throughout its length, into which bent edges of adjacent sheets are inserted, and sprung or spread apart by a tool inserted between said edges through the slot, substantially as described. 7th. In the construction of sheet metal structures, a metal sheet having a series of corrugations or indentations across its surface, and its longitudinal edges bent at an angle to the plane of the sheet, the said bent edges being inserted in slotted tube, and the corrugations at the ends of one sheet superposed on those of the next, substantially as and for the purposes set forth.

No. 29,463. Grooved Pulley. (*Poulie cannelée.*)

Walter H. Avirs, York, Ont., 6th July, 1888; 5 years.

Claim.—1st. The combination, with a grooved pulley, of a rubber ring encircling the said pulley at the bottom of its groove, substantially as and for the purpose specified. 2nd. A grooved pulley having a recess formed around it at the bottom of its groove, in combination with a rubber ring E inserted in the said recess, substantially as and for the purpose specified. 3rd. A grooved pulley having a recess formed around it at the bottom of its groove, in combination with a rubber tubular ring E inserted in the said recess, the said ring being filled with a core of rope or other slightly compressible material, substantially as and for the purpose specified. 4th. A pulley composed of two steel sheets A bolted or riveted together, and having a solid metal hub C, and a groove formed around its periphery by outwardly flaring the steel sheets A, in combination with a rubber ring E inserted in the recess formed in the bottom of the groove D, substantially as and for the purpose specified.

No. 29,464. Machine for Jointing and Planing Staves. (*Machine à jointoyer et raboter les douves*)

Charles R. Penfield, Rochester, N. Y., U. S., 6th July, 1888; 5 years.

Claim.—1st. In a machine for jointing staves, the combination, with the bed plate and feed rollers, of gates with crossed arms pivoted on opposite sides so as to swing in a horizontal plane, saws attached to said gates and lying in line with the edges of the staves, and cams resting between the arms for operating the gates and causing the saws to joint the staves in bilge form, as described. 2nd. In a machine for jointing staves, the combination, with the bed plate and feed rollers, of gates with crossed arms pivoted on opposite sides so as to swing in a horizontal plane, saws attached to said gates and lying in line with the edges of the staves, double cams resting between the arms for operating the gates, and an upright shaft on which the cams rest, said shaft being movable forward and back to change the throw of the gates, as herein shown and described. 3rd. In a machine for jointing staves, the combination, with the bed plate and suitable feed rollers, of gates with crossed arms pivoted on opposite sides, so as to swing in a horizontal plane, saws attached to said gates and lying in line with the edges of the staves, double cams on an upright shaft between the long arms of the gates, and cheek pieces with slotted lugs attached to the long arms of the gates against which the cams act, in the manner and for the purpose specified. 4th. In a machine for jointing staves, the combination, with the bed plate and suitable feed rollers, of gates pivoted on opposite sides so as to swing in a horizontal plane, saws attached to the gates and lying in line with the edges of the staves, double cams lying between the long arms of the gates and operating the same, said long arms being crossed in front of the cams and behind the pivots, and springs connecting the rear ends of the gates with the opposite sides of the frame, as shown and described and for the purpose specified. 5th. In a machine for jointing staves, the combination, with the bed plate and suitable feed rollers, of gates pivoted on opposite sides so as to swing in a horizontal plane, saws attached to the gates and lying in line with the edges of the staves, the upright shaft carrying cams for operating the gates, the swinging frame to which the upright shaft is attached, and a rack on the frame with which engages a worm to swing said frame forward and back, as set forth. 6th. In a machine for jointing staves, the combination, with a bed plate upon which the staves are placed, and a guide against which the edges of the staves rest, of a plunger on the bed plate which receives forward and back motion, a stud or lug standing upright on the plunger, a crank wheel above the plunger, a crank pin on the crank wheel that strikes the stud on the plunger, to give the forward movement, and a spring on the shaft of the plunger to retract the same, as herein shown and described.

No. 29,465. Tobacco Pipe. (*Pipe à fumer.*)

Frederich Roesling, Cleveland, Ohio, U. S., 6th July, 1888; 5 years.

Claim.—In a pipe, the shank B having the longitudinally extending smoke-chamber c in line with its stem-opening, the bowl-opening b,

a passage *h* leading therefrom into the rear end of said chamber, the downwardly and rearwardly inclined reservoir *l* having an inlet passage *l* leading into the bottom of the chamber *c*, and an air passage *a* also leading into the smoke chamber from said reservoir above the passage *l*.

No. 29,466. Mechanism for Driving Machinery. (*Mécanisme de commande des machines.*)

Abel Klomstovor and B. S. Van Tuyl, Petrolon, Ont., 7th July, 1888; 5 years.

Claim.—1st. The regulation of the admission of steam to the engine by the driven machine, as and for the purposes set forth. 2nd. The swinging frame B, bracket A, coupling rod shaft E, tension pulley C, belt D and pulley F, in combination with the upright *a*, notched regulating bar *c*, lever *e*, slide *d* and set screw *f*, as and for the purpose set forth. 3rd. A bracket A, secured to the boiler for supporting this mechanism, as set forth. 4th. The swinging frame B, bracket A, tension pulley C, belt D and pulley F, in combination with the tightener pulley *b*, flexible band *h*, springs *a*, *z*, *z*, *z*, ratchet *g* and dog *g*, as and for the purpose set forth. 5th. The coupling rod shaft E and coupling S, in combination with the tubular coupling rod G, substantially as and for the purpose set forth. 6th. A coupling rod formed tubular, as and for the purpose set forth. 7th. A coupling formed hollow and square for a short distance on its interior face, as and for the purpose set forth. 8th. The combination of the coupling S₁ and bar T, with the tubular coupling rods G₁, G₂, substantially as and for the purpose set forth. 9th. The coupling S₂ formed with the shoulders *l*, in combination with a collar L formed formed with shoulders *l*, spring *l*, shoulder *l* and shaft G₁, as and for the purpose set forth. 10th. The combination of the shaft G₁, bevelled gear wheels X₁, X₂ and N, brackets Y₁ and bearings W, W, W, in combination with the bevelled pinions Y₁, Y₂, and R, toothed wheel Z₁, Z₂, cog pinion Z and shafts H₁, H₂, X and O, as and for the purpose set forth.

No. 29,467. Stopper for Bottles, etc.

(*Bouchon pour bouteilles, &c.*)

Henry Davidson, London, Eng., 7th July, 1888; 5 years.

Claim.—1st. A stopper for closing bottles, jars and other vessels, comprising a piece of cork having a screw thread cut thereon corresponding with a screw-thread in the mouth of the bottle or other vessel to be closed, in combination with means for facilitating the introduction and removal of the same, substantially as described. 2nd. The combination, with a cork having an external screw-thread cut thereon, of a plug secured in the body of the said cork. 3rd. The combination, with a cork having a screw-thread cut on the exterior thereof, and adapted to fit a corresponding screw-thread in the vessel, bottle, or cask, of a hollow plug or plugs so arranged that the stopper may be removed by a key.

No. 29,468. Adding Machine.

(*Machine à additionner.*)

Dorr E. Felt and Robert Tarrant, Chicago, Ill., U. S., 7th July, 1888; 15 years.

Claim.—1st. In an adding machine, a series of indicator-wheels having coincident axes, each of said wheels bearing on its periphery figures 0 to 9 inclusive in numerical order, each of said wheels being provided with a cam, and a ratchet and a pinion provided with a pawl in engagement with said ratchet combined with a corresponding series of actuating keys, each provided with a segment-rack in engagement with one of said pinions, and a series less by one than the number of said wheels of vibrating levers, each in engagement with the cam of one wheel, and with the ratchet of the next adjoining wheel, and a corresponding number of impelling-springs to actuate said vibrating levers, as set forth. 2nd. The combination, with the indicator wheels the actuating segment-levers and the graduated keys of a positive stop for preventing over rotation, the same being put in operation by the keys, substantially as set forth. 3rd. The combination, with the indicator-wheels, the actuating segment-levers and the graduated keys, of the detents J, one for each wheel, and the mechanism operated by the keys for depressing said detents into engaging position, substantially as set forth. 4th. In an adding machine, the series of indicator-wheels and carrying mechanism connecting such wheels, in combination with the series of segment levers, the several series of keys, and a series of positive stopnuts in operation by the keys for stopping the rotation of the several wheels, substantially as specified. 5th. The combination, with the keys, the yielding stops J, rods J, detents J₁ and the indicator-wheels and their ratchets *a*, substantially as specified. 6th. The combination, with the actuating keys C and number-wheels A, the yielding-stops G, rods J and detents J₁, of the springs J₂, substantially as specified. 7th. The combination, with the main shaft and indicator-wheels, all mounted thereon, and ratchets *a*, all mounted upon a common shaft, of automatic carrying mechanism consisting of the cams *l*, the levers M provided with arm *m*, resting upon and actuated by the cams, the spring *n* and the push-pawl M, substantially as specified. 8th. In an adding machine, a series of indicator-wheels arranged side by side upon a shaft, a series of segmental levers for actuating said wheels, and the several series of keys, in combination with a series of separate carrying devices, each provided with a retracting spring in which power is stored for actuating said carrying devices, and two stops for preventing over rotation and backward rotation respectively, substantially as set forth. 9th. In an adding machine, the combination, with the several numeral-wheels, and their carrying mechanism of actuating-key mechanism for each of said wheels, and positively acting stop-motion detents for preventing over-rotation under the impulses of said keys or carrying mechanism, substantially as specified. 10th. In an adding machine, the combination, with the numeral wheels, their key-actuating devices and their carrying mechanisms, of detents for preventing over rotation under actuations received directly from the keys and other detents for preventing over-rotation under

actuations by the carrying mechanisms, substantially as specified. 11th. In an adding machine, the combination, with the series of numeral wheels and their actuating devices, of the series of levers for actuating said wheels in carrying, the series of springs in which power is stored for actuating said levers, and the series of positively acting stop-motion detents for preventing over-rotation under the impulse of the carrying levers, substantially as specified. 12th. In an adding machine, the combination, with each numeral-wheel and its carrying-lever, of a positively acting stop motion detent acting upon the wheel, and a spring for throwing said detent into engagement, substantially as set forth. 13th. In an adding machine, the combination, with each numeral-wheel and its carrying lever, of a positive stop-motion detent, a spring for throwing the detent into engagement, and a catch or equivalent detaining device for detaining the detent momentarily, substantially as set forth. 14th. In an adding machine, the combination, with the numeral wheels, of the spring-actuated positive detent N, and the notched disk E₂ having a movement independent of its wheel for releasing the wheel from the lock of said detent before said wheel is actuated, substantially as specified. 15th. In an adding machine, the combination, with the numeral-wheels, of the spring-actuated positive detent N, the carrying-lever and the notched disk E₂ having a movement independent of its wheel for releasing the wheel from the lock of the detent before said wheel is actuated, substantially as set forth. 16th. In an adding machine, the combination, with the carrying lever and its actuating cam, of the spring-actuated detent N, and the pin upon the carrying-lever for drawing the detent back, the bell-crank lever and the bar under which the latter catches, substantially as set forth. 17th. In an adding machine, the combination of the stop-levers with the numeral-wheels, their actuating devices, the locking-detents J₁ and the connecting rods J, the stop levers having an excess of motion, whereby they are enabled to get under way before actuating the detents, substantially as specified. 18th. In an adding machine, the combination of the numeral wheels, their actuating devices, detents J₁, the connecting rods J and the stop-levers, the latter having an excess motion as specified, and both detents and levers having separate lifting-springs, substantially as specified. 19th. The combination of the numeral-wheels, their actuating devices, detents J₁ and the rods J with the stop-levers inclosed in elongated loops at the lower ends of the rods, substantially as specified. 20th. The combination of the numeral-wheel, its actuating segment, the series of keys and the stop motion detent J₁, the lowest key being connected to the detent so as to actuate the same directly, and the other keys acting thereon through the stop-lever and rod J with the stop lever or rod, substantially as specified. 21st. In an adding machine, the combination of the numeral wheels, their actuating segments and the stop-motion detents J₁, with the lowest key of each series of keys, the latter being connected directly to and actuating said detents, substantially as specified. 22nd. The stop-levers having the forked ends, in combination with the several series of keys actuating said levers, the lowest key of each series acting as a guide to one of the levers, substantially as specified. 23rd. The combination of the stop-levers with the several series of keys actuating the same, the lowest key of each series being let into the end of the levers, and the cross-bar G₁ substantially as set forth. 24th. The combination of the numeral-wheels in series, all borne upon a single shaft, and provided with depressible stop-latches U as specified, with said shaft, and the pins T driven into said shaft for engaging said stops and rotating said wheel, substantially as set forth. 25th. The rotatable main shaft and the numeral-wheels mounted thereon, said shaft having latches for engaging said wheels during its rotation, in combination with the positive locking detents, and the rotatable bar R, for releasing said detents to permit said wheels to be returned to 0 by revolving said shaft, substantially as set forth. 26th. The numeral-wheels provided with spring latches U, the shaft upon which the numeral-wheels are loosely mounted, said shaft being provided with pins T to engage said latches and rotate the wheels in one direction, the locking detents and the bar R for releasing the wheels from said detents, in combination with the stops upon the wheels to engage with said pins and said detent, substantially as set forth. 27th. The pinions E and the numeral-wheels E₂ notched upon the periphery, in combination with the numeral-wheels A, the ratchets E, the pawl *g*, normally resting on said ratchet near the point of a tooth, and detents N, substantially as set forth. 28th. The numeral wheels, the actuating ratchets and the disks E₂ carrying the pawls acting upon said ratchets, and also acting to release the positively acting locking-detents N, in combination with said detents, the disks having some excess motion before moving the ratchets to give time for releasing the lock, substantially as set forth. 29th. In an adding machine, the combination, with the numeral wheels, of the carrying mechanisms and the positively acting stop-motion devices for preventing over-rotation under the carrying impulses, the hook *o* and bar *p*, whereby said stop-motion devices are caused to act an instant later than the carrying devices, substantially as set forth. 30th. The combination, with the carrying-lever, of a positively acting stop-motion detent for preventing over-rotation under the impulse of the carrying, said detent being automatically withdrawn from engagement with the numeral wheel by the lever as the latter moves back preparatory to a carrying operation, substantially as set forth.

No. 29,469. Hand Loom. (*Métier à tisser à bras.*)

Porter and Reeves, assignees of Charles N. Newcomb, Omaha, Neb., U. S., 7th July, 1888; 5 years.

Claim.—1st. The combination of crank-shaft *f*, pitmen *g*, heddles B, ratchet *h*, pawls *k*, arms *l*, straps *l* and slide-bar *m*, substantially as described for operation as specified. 2nd. The combination of pivoted beam *e*, arms *g*, posts *h*, springs *h* and slide-bar *m*, substantially as and for the purpose specified.

No. 29,470. Music Turner. (*Tourne-musique.*)

James Miller, Detroit, Mich., U. S., Thomas Mearns and George Williamson, Windsor, Ont., 7th July, 1888; 5 years.

Claim.—1st. A music turner consisting of the combination, with the frame B, of turning wires A, each said wire having a shaft section or stem extended up behind the music, and provided with an actuating

spring α at the top, a radial arm α , and an upturned end or finger α and suitable keys for engaging said separate fingers until released by the player, substantially as described. 2nd. In a music turner spring actuated turning wires A turned upward at their end α , each said upturned end split and thereby adapted to engage a leaf within its keef, substantially as described. 3rd. In a music turner, turning wires A, each provided with an actuating spring and with their stems α lying in a plane parallel with the frame, and extending up back of the music, said wires provided with beads α , which by each, when carrying the leaf to its turned position, will overlap those wires lying to the left of it, substantially as described. 4th. The music turner consisting of the spring actuated wires A, spring keys C and clips E, in combination with a return-wire B adapted to engage the music at its heel, substantially as described. 5th. The combination, with a music turner of a spring clamp F extending the whole length of the music for engaging the heel or stub of worn out music, or separate sheets, substantially as described. 6th. The clip, E, consisting of a coiled wire having its heel set into the frame, and a screw inserted through the orifice of the coil, substantially as and for the purposes described.

No. 29,471. Electric Motor with Governor.

(*Moteur électrique avec gouverneur.*)

The Baxter Electric Manufacturing and Motor Company, (assignee of William Baxter, Jr.) Ninth Electoral District of Baltimore, Md., U. S., 7th July, 1888; 5 years.

Claim.—1st. In an electric motor having the pole pieces united by a bridge, the combination, with a series of coils wound upon the field magnet cores, of the shunt connections e , e_1 , e_2 , etc., united with the several coils at intervals, and extended from the surface of the magnet coils (at the same point) to the bridge from opposite sides thereof, a shunt box upon the bridge between the pole pieces with contacts united to the said shunt connections, a shunt block or other suitable connector, and a centrifugal governor, actuated by the motor for successively closing the circuit through the shunt connections, as and for the purpose set forth. 2nd. In an electric motor, the combination, with the series of coils wound upon the magnet cores, of a series of shunt connections connected with the several coils at intervals means as a shifting block or piece for closing successively the electrical circuit through the several shunt connections, a centrifugal governor mounted upon the armature arbor or shaft, a lever actuated by such governor to operate the shunt connector, and an arm attached to such lever, and a torsion spring resisting the centrifugal force of the governor, and arranged at an acute angle with the said arm to operate with a diminishing leverage upon the arm as the speed of the motor increases, as and for the purpose set forth. 3rd. In an electric motor, the combination, with the main coils upon the magnet cores, of an auxiliary coil connected with the line or circuit wires and wound upon the cores in the opposite direction from the main coils, a shunt connection from the ends of such auxiliary coil, shunt connections attached at intervals to the main coils, contact pieces attached to such shunt connections, and a moving contact operating in connection with the same to first close the circuit through the shunt connections of the main coils, and to subsequently close the shunt connections from the auxiliary coil to cause a reaction upon the residual magnetism of the field when the motor is very lightly loaded, substantially as herein set forth. 4th. In an electric motor, the combination, with the first coil of wire wound upon the magnet cores, of the line or circuit connection attached to the coil between its ends, an electrical connection from one end of the coil to the other coils, and a shunt connection from the opposite end of such coil, and means for closing the circuit through such shunt connection to react on the residual magnetism of the field, as and for the purpose set forth. 5th. In an electric motor, the combination, with the magnet cores having poles at opposite sides of the armature, of the magnet coils wound upon such cores, a shunt box mounted upon a bridge between the ends of the poles, shunt connections attached at intervals to the main coils and terminating in electrical connection, adjacent to one another in the shunt box, a governor mounted upon the armature shaft, and a connector moved thereby to successively close the several shunt circuits, and thus cut out the successive sections of the main coils from the circuit, as and for the purpose set forth. 6th. In an electric motor, the combination, with magnet cores having poles at opposite sides of the armature, of the main coils wound upon such cores, a shunt box mounted upon a bridge between the ends of the poles, shunt connections or strips attached at intervals to the main coils with the latter wrapped over the same, and the said strips terminated in electrical connections adjacent to one another in the shunt box, a governor actuated by the motor, and a connector moved thereby, to successively close the several shunt circuits, and thus cut out the successive sections of the main coils from the circuit, as and for the purpose set forth. 7th. The combination, in an electric motor, of a governor affixed to the armature shaft, and having expanding weights linked to a sliding sleeve upon such shaft, the sleeve being provided with a thrust ring moved to receive anti-friction balls, and with a collar pivoted to a governor lever, and the collar being pressed against the thrust ring by a spring applied to the governor lever, as and for the purpose set forth. 8th. In an electric motor provided with a bridge between the pole pieces, and a shunt box mounted upon such bridge, the combination, with the cores, of flanges upon the same, field coils wound between said flanges, shunt connections attached at intervals to the field coils with the latter wrapped over the same, a notched α in one of the flanges, and the shunt connections brought together and extended through such notch in a single band to the shunt box, as and for the purpose set forth. 9th. In an electric motor, the combination, with a bridge between the pole pieces and a shunt box mounted upon the said bridge, of the magnet cores, field coils wound upon said cores, shunt connections attached at intervals to the field coils with the latter wrapped over the same, and extended from the coils toward the shunt box upon the bridge, elbow pieces α , α having each one arm fitted in the shunt box to form a contact surface, and the other arms extended upon the pole pieces between the several shunt connections, an insulating material between the several shunt connections, and a clasp pressing such connections and elbow pieces together, as and for the purpose set forth. 10th. In an electric motor, the combination, with a bridge between the pole pieces, and a shunt

box mounted upon said bridge, of the magnet cores, field coils wound upon said cores, shunt connections formed of flat strips of thin sheet metal attached at intervals to the field coils, and extended beneath the several layers of the field coils to the same point upon the exterior of the latter, and to the shunt box upon the bridge and connected with contacts thereon, as and for the purpose set forth. 11th. The shunting device having a series of yielding springs formed of flat metallic strips, a holder to sustain such springs with their flat sides adjacent, and a movable contact arranged and operated to move in succession over the yielding ends of the springs, as and for the purpose set forth. 12th. The shunting device having a series of yielding springs formed of flat metallic strips, a holder formed with a series of adjacent slits to sustain the yielding springs, with their flat sides in proximity, a movable holder arranged and operated to move in succession over the yielding ends of the springs, and an abutment arranged at the end of the springs to receive the pressure of the block or contact upon the last spring, as and for the purpose set forth. 13th. In an electrical shunt box, the combination, with the two series of yielding springs and the contact piece movable over the same, as set forth, of a holder formed upon its opposite edges with two series of adjacent slits fitted to the yielding springs, and having a stop to arrest the movement of the movable contact piece when retracted from contact with the series of springs, substantially as described. 14th. In an electrical shunt box, the combination, with a spring guide provided with two sets of adjacent slits, of two series of yielding springs inserted in such slits and projected therefrom, with their ends in the same plane, a movable block arranged to form an electrical connection between the opposed pairs of springs, and means for pressing the block upon the springs when moved, substantially as herein set forth.

No. 29,472. Clothes Drying. (*Séchoir à linge.*)

Abram L. Pilkey, Newmarket, Ont., 10th July, 1888; 5 years.

Claim.—1st. A standard S and arm A, rigidly secured in position by any suitable means, in combination with the arm B socket bracket C, bolts D and d_1 and arms E, substantially as and for the purpose set forth. 2nd. A standard S and arm A, rigidly secured in position by any suitable means, in combination with the arm B, socket bracket C, bolts D and d_1 and arms E, and means for adjusting and holding them at any required elevation, substantially as and for the purpose set forth. 3rd. A standard S, arm A, formed with slot α , ground sill β and braces I and J, in combination with the arm B, pin p , socket bracket C, bolt D and d_1 , arms E, pulleys P, P₁, P₂, cord H, crank shaft F, spool f_1 , ratchet f_2 and dog f_3 , as set forth.

No. 29,473. Garment Protector.

(*Protecteur de vêtement*)

Arthur F. Langdon, Hartford, Conn., U. S., 10th July, 1888; 5 years.

Claim.—1st. The herein described linen protector consisting essentially of the neck band portion α , constructed to embrace the neck of the wearer inside of the ordinary collar, and provided with a spring constructed to encircle the neck, whereby the band is pressed from the neck of the wearer, the apron portion constructed to fold over the ordinary collar, substantially as described. 2nd. The herein described linen protector consisting essentially of the neck-band portion with its spring, the said spring having a normal form nearer straight than the curve of the neck, whereby the band is pressed away from the neck of the wearer, and the apron portion projecting at each end beyond the band portion and forming flaps to overlap the necktie and shirt-front, substantially as described.

No. 29,474. Faucet. (*Robinet.*)

Elijah U. Scoville, Manlius, N. Y., U. S., 10th July, 1888; 5 years.

Claim.—1st. The combination of the barrel B, pivoted with the channels α , having their adjacent ends α , α , deflected laterally to the exterior of the barrel, the convex seat b across the ends of said channels, the concave valve c provided with the post c_1 , and the lever l pivoted to the barrel between the channels and carrying the valve, substantially as described and shown. 2nd. The combination of the barrel B provided with the channels α , α , having their adjacent ends α , α , deflected laterally to the exterior of the barrel, the convex seat b across the ends of said channels, the concave valve c provided with the post c_1 , the lever l pivoted to the barrel between the channels and carrying the valve, and the spring s arranged to push the lever into a position to normally hold the valve in its closed position, substantially as described and shown.

No. 29,475. Steam Hose or Tubing.

(*Tuyau élastique à vapeur.*)

Edward L. Wood, Hoboken, N. J., U. S., 10th July, 1888; 5 years.

Claim.—1st. A hose or tube having in its structure one or more plies of wire cloth or netting, coated with a mineral fibrous non-conducting fire proof material, for the purpose described. 2nd. A flexible fluid tight hose having in its structure one or more plies composed of wire cloth or netting and asbestos, as and for the purpose described. 3rd. A flexible fluid tight hose having in its structure one or more plies of wire cloth or netting, coated with asbestos, pulp, or equivalent non-conducting fire proof material, for the purpose described. 4th. A flexible fluid tight hose composed of plies of rubber and asbestos coated wire cloth, and having an outer coating of rubber or canvas to protect the asbestos, as and for the purpose described. 5th. An improved fabric for hose composed of one or more layers of wire cloth or netting, and one or more coats or layers of asbestos, pulp, or equivalent non-conducting fire proof material, and an outer coating of rubber or the like.

No. 29,476. Stepped Cone-Pulley.

(*Tambour de transmission du mouvement.*)

Robert Smallwood, Charlottetown, P. E. I., 10th July, 1888; 5 years.

Claim.—The combination of pulleys B, B' and bolt shifter D, substantially as set forth.

No. 29,477. Mounting Diamonds on Saws.*(Ajustage des diamants aux scies.)*

James W. Maloy, Marietta, Ga., U.S., 10th July, 1888; 5 years.

Claim.—1st. The within described improvement in setting diamonds in metal holders, consisting in placing an amalgam in the socket of the holder and forcing the stone into the amalgam while soft, and thereby forming a bed which when it hardens is in contact with the entire sunken portion of the stone, substantially as described. 2nd. The combination of a socketed holder, a stone and a body of amalgam surrounding the stone, within the socket, substantially as described. 3rd. The combination of the holder having a socket, a diamond, intermediate body of amalgam and surrounding ring of solder, substantially as described. 4th. The combination of the holder having a socket, a stone body of amalgam surrounding the stone, and a surrounding pin turned down on and toward the stone, substantially as described.

No. 29,478. Coal and Stone Drilling Machine. *(Machine à percer le charbon et la pierre.)*

James T. Johnson, Peoria, Ill., U.S., 10th July, 1888; 5 years.

Claim.—1st. The combination, in a drilling machine, of a body composed of two sections hinged on one side and having fastening means at the other, and provided centrally with threaded recesses to conjointly form a central opening, a threaded bit stock to bear and travel in said opening and having a longitudinally extending key way, a gear wheel having a spline to engage said key way, and devices for rotating said gear wheel, substantially as set forth. 2nd. The combination, in a drilling machine, of the sections *a, a*, hinged at one side and connected by means of a key at the other, and internally provided with a box lining forming a threaded recess which provides an opening for the carrying of the bit stock which has a key way, a gear wheel having a spline to engage said key way, and means for rotating said gear wheel, substantially as set forth. 3rd. The combination, in a drilling machine, of the sections *a, a*, hinged at one side and detachably connected at the other side, and having threaded recesses to conjointly form a central threaded opening, pintles formed on the sides of said section, and a frame having bearings to detachably engage said pintles, a threaded stock for engaging said threaded opening, and means of rotating said stock, substantially as set forth. 4th. The combination of the sections *a, a*, recessed to conjointly form a threaded opening, pivotally connected at one side and detachably connected at the other, the lower section having integrally a forwardly extending arm provided with a transversely perforated cylinder or bearing, a threaded stock to engage said threaded opening, and provided with a longitudinal key way, a gear wheel *c* having a spline to engage said key way, and a crank shaft bearing in said transversely perforated cylinder and having a gear wheel *d* meshing with said wheel *c*, substantially as set forth.

No. 29,479. Revolving Churn.*(Baratte rotative.)*

Frank Noble, London, Ont., 10th July, 1888; 5 years.

Claim.—1st. In combination with a wooden churn *A* and a wooden head *D*, the metallic lining *E*, substantially as shown and specified. 2nd. In combination with a wooden churn *A*, the metallic bottom *G*, substantially as shown and specified. 3rd. In combination with churn *A*, the bent tube *H* passing through orifice in side of churn, and having a trumpet shaped inner end *I*, covered by a plate *J* of perforated metal or wire cloth, and provided with a thumb-screw *K* or pet cork on outer end to allow of escape of gas and to regulate the same, substantially as shown and specified.

No. 29,480. Treating Ramie and other Fibres. *(Traitement de la ramie et autres fibres.)*

Christian C. Kauffmann and John Austin, New Orleans, La., U.S., 10th July, 1888; 5 years.

Claim.—1. In the process herein described of treating or preparing ramie, jute, hemp and other fibres, exposing the fibre under cover after decortication to the action of a body or current of artificially heated air, and afterward exposing it to a mechanical cleaning action, whereby the gummy and other matter in the fibres are first solidified and subsequently mechanically removed, essentially as specified. 2nd. In the process herein described of treating or preparing ramie, jute, hemp and other fibres after decortication, exposing the fiber while in motion first to the action of a body or current of artificially heated air, and afterward to a mechanical cleaning action, substantially as and for the purposes specified. 3rd. The within described process of treating or preparing ramie, jute, hemp and other fibres, which consists in subjecting the material while in continuous and uniform motion, first to the action of decorticating devices, then to a drying action by artificially heated air, and subsequently to a beating or brushing or mechanical cleaning action, essentially as described.

No. 29,481. Belt Fastener. *(Agrafe de courroie.)*

Robert Cuthbert, Hamilton, Ont., 10th July, 1888; 5 years.

Claim.—In a belt fastener, the combination of a metallic concave head *A* having at each end a curved head *A'*, as shown, and a belt *B*, substantially as and for the purpose hereinbefore set forth.

No. 29,482. Window Shade. *(Store de fenetre.)*

Anna Huffer, Jeffersonville, Ill., U.S., 11th July, 1888; 5 years.

Claim.—1st. The combination, with the window frame, of the buttons *B, B*, the cord-tighteners below said buttons, the endless cords passing around the buttons and the cord tighteners, the guard *H* secured to said endless cords and having depending perforated ears, the roller journaled in said ears, and the curtain passing loosely

over said roller, and depending from the same in front and rear thereof, but not connected thereto, as set forth. 2nd. The combination, with the window frame, of the buttons *B, B*, the cord-tighteners *C, C* below the buttons, the endless cords passing around the buttons and the cord tighteners, the guard *H* having the endless cords passed through its ends and secured thereto, the said guard being further provided with the depending perforated ears *I*, the roller *L* journaled in the said ears, the curtain passing over said roller, but not connected thereto, and the cords *M* attached to ends of the curtain, as specified.

No. 29,483. Clothes Horse. *(Séchoir à linge.)*

John W. Fletcher, Chelsea, Mass., U.S., 11th July, 1888; 5 years.

Claim.—1st. In a clothes horse constructed and arranged for operation substantially as described, a brace or bar *K* secured to the upright *B*, and projecting each side thereof, substantially as and for the purpose specified. 2nd. In a clothes horse constructed and arranged for operation substantially as described, a brace or bar *K* having an angular portion *N*, and secured to the upright *B* and projecting each side thereof, substantially as and for the purpose specified.

No. 29,484. Direct Acting Engine.*(Machine à effet direct.)*

Charles C. Worthington, Irvington, N. Y., U.S., 11th July, 1888; 5 years.

Claim.—1st. The combination, with three engines arranged to be operated in pairs upon the duplex principle, of valve operating connections for operating the valve or valves of each engine from either of the others, substantially as described. 2nd. The combination, with the three engines *A, B, C*, of the rock shafts *g, h*, each having connections for attachment to the piston rods of two of said engines, and to the valve rods of two of said engines, substantially as described. 3rd. The combination, with the three engines *A, B, C*, of the rock shafts *g, h*, made in part and connected by couplings, *s*, substantially as described. 4th. The combination, with the shafts *g, h*, having two rock arms *o, x*, of the link *q* connected to the valve rod *s*, and arranged to be connected to either of said arms, substantially as described.

No. 29,485. Car Heating Apparatus.*(Appareil de chauffage des chars.)*

James H. Sowall, Portland, Me., U.S., 11th July, 1888; 5 years.

Claim.—1st. In a car heating apparatus, the main heater comprising the water space or chamber, an interior and an exterior steam chamber, the water circulation pipe, and the main steam supply pipe, substantially as described. 2nd. In a car heating apparatus, the main steam supply pipe, substantially as described, of a base, having the chambers *a₁, a₂*, and one or more ports, as *a^o*, the concentrically arranged cylinders or tubes *a₁, a₂, a₃*, the block *b* having the annular chamber *a^o* and port *a^o*, the flexible diaphragm *c*, nut *e*, and cap *d*, all substantially as described. 3rd. In a car heating apparatus, the main heater having a water space and a surrounding steam space, and a pipe, as *s*, for removing the water of condensation, combined with the warming pipes, and the main steam supply pipe, substantially as described. 4th. In a car heating apparatus, the heater having the steam space, and enclosed water space, and the water gauge combined with the warming pipes, and the main steam pipe, substantially as described. 5th. In a car heating apparatus, the heater comprising the base *a*, the cylinders or tubes *a₁, a₂, a₃*, combined with the block *b* mounted upon the cylinders *a₁, a₂*, the cap *d*, and the connecting flexible plate *c*, substantially as described. 6th. In a car heating apparatus, the main heater having the steam and water spaces, the main steam pipe *n*, branch *n₁*, and valve *n₂*, combined with the warming pipes, the coil *o* contained in the auxiliary heater in contact therewith, and the valve *o₁*, substantially as described.

No. 29,486. Cooking Range. *(Landier de cuisine.)*

John M. Scribner, Orangeville, Ont., 11th July, 1888; 5 years.

Claim.—1st. The combination of the furnace *A*, the water pipe *C*, the hot air chamber *H*, and the air pipes *I* and *G* for heating purposes, substantially as and for the purposes hereinbefore set forth. 2nd. The combination of the furnace *A*, the dampers *D* and *J*, the flue *F*, and the oven *E* for cooking, substantially as and for the purpose hereinbefore set forth.

No. 29,487. Lantern. *(Lanterne.)*

Hudson M. Drew and Joseph A. Grant, New Limerick, Me., U.S., 11th July, 1888; 5 years.

Claim.—In a lantern, the combination, substantially as before set forth of the standards having the guide staples on their inner opposing sides, the wire frame movable in said staples and attached at its lower end to the burner plate and at its upper end to the top cap, the retaining spring comprising an engaging spur, and an operating finger loop, the upper depending slotted tube, the coiled spring inclosed by said tube, and the cross-wire passing through the slot in the tube, and bearing on the coiled spring therein.

No. 29,488. Machine for Pulverizing Rock and other Material. *(Machine à broyer la pierre et autres matières.)*

Austin D. Searls, Sr., Seward, Austin D. Searls, jr., Channahon, and Devitt C. Sears, Troy, Ill., U.S., 11th July, 1888; 5 years.

Claim.—1st. In the pulverizing machine shown and described, the combination of the drum *D* having its inner head *D^o* provided with the perforations *r* surrounding its hub, and the removable sewing plates *a*, the notched or corrugated beater plates *R* arranged on the inner peripheral surface of said drums, the heads *D₁* having a central feed opening, and the removable lining plates *at*, the beater head *D₂*,

consisting of the hub H, radial arms *a* and beaters *d* secured to the outer ends of said arms, and the case *c*, the said beater head D5 arranged within said drum and adapted to rotate in an opposite direction therefrom, substantially as and for the purpose set forth. 2nd. The combination, with the case *c* consisting of two parts hinged together and having the feed pipe F, and the exit pipe E arranged on the side of said case opposite to said feed pipe shaft, beater head D5, consisting of the hub H secured on the inner end of said shaft, and having radial arms *a*, and beater plates *d* secured on the outer ends of said arms, shaft S, rotatable drum B consisting of hub D2 secured on said shaft, head B' having the central perforations *r*, and the removable lining plates *a*, and B' having the central feed opening surrounded by the outwardly projecting flange B4, and having the removable lining plates *a*, the said beater head arranged within said drum and adapted to rotate in an opposite direction therefrom, and adapted to have a suction air blast pass through said case and drum, substantially as and for the purpose set forth. 3rd. The combination of the shafts S and S' having respectively the pulleys P and P', and fly wheels F, I, the case *c* constructed in two parts hinged together and having an inlet feed pipe F, and an exit pipe E arranged on its side opposite said feed pipe, and adapted to have a suction air blower applied thereto, rotatable drum B and beater head D5, all arranged to operate substantially as and for the purpose set forth. 4th. In a rock pulverizing machine, the combination of a rotatable drum having a feed opening in one of its heads, and exit perforations in its head opposite the head having the feed opening, a beater head arranged within said drum and adapted to rotate in an opposite direction therefrom, and a case for inclosing said parts and having a suction air blower for withdrawing the pulverized material from said drum and case, substantially as and for the purpose set forth.

No. 29,489. Combined Doll and Phonograph. (*Poupée-phonographe*)

William W. Jacques, Newton, Mass., U. S., 11th July, 1888; 15 years.

Claim.—1st. The combination of a phonograph and a doll provided with a body carrying said phonograph, and a head having an orifice therein for the emission of sounds from the phonograph, substantially as described. 2nd. The combination of a phonograph having its stylus or tracer, supported by the opposing tension of two or more springs, and a dog serving as a receptacle and a support for said phonograph, substantially as described. 3rd. The combination of a phonograph and a doll having a body provided with a cavity for receiving and a support for holding the phonograph therein, and a resonator contained in a perforated head for conveying and emitting sounds produced by the phonograph within the body, substantially as described. 4th. The combination, with a doll provided with a cavity, and a support or supports for a phonograph, of a phonograph having a diaphragm held in a frame at one edge, and controlled in its movement by a spring upon the upper and under sides of said frame, substantially as described. 5th. In a phonograph, the combination of a traveling record-surface, with a pivoted diaphragm provided with a stylus and unattached between two counteracting springs under tension in operative relation with said record surface, substantially as described. 6th. The combination, with a phonograph, of an automatic slipping device, actuated by the reversed motion of the record-surface to withdraw the diaphragm tracer from the contact with the record-surface, substantially as described. 7th. The combination, in a phonograph, of a diaphragm held in a hinged frame cushioned by a spring acting upon one side thereof, with a second spring acting upon the other side of the frame, and having an extension bearing upon the record surface, so as to disengage the stylus from the record-surface when the motion of the latter is reversed, substantially as described. 8th. A record plate for phonographs consisting of a foil of metal which is superficially hard upon the side which is to receive the record, and is normally soft upon the other side, substantially as described and for the purpose specified. 9th. In combination, with a phonograph or record-plate, of a record foil made superficially hard upon the side which is to receive the record, whereby while the record may be readily impressed thereon, it becomes practically permanent, substantially as described.

No. 29,490. Filtering Apparatus.

(*Appareil à filtrer.*)

Robert Cooper, Herbert F. Clayton and George H. Holdroyd, Huddersfield, Eng., 11th July, 1888; 5 years.

Claim.—1st. In a filtering apparatus, one or more perforated tubes having a filtering medium wrapped upon it or them and turned in at the ends, the said tube, or each of the said tubes, where more than one is employed being carried at one end upon a tapering nozzle through which the liquid to be filtered is introduced, and at the other end upon a tapering plug in such a manner that when the said plug is forced into the tube tight joints will be formed at both ends, substantially as described. 2nd. In a filtering apparatus having perforated tubes covered with filtering cloth turned in at the ends, forming the said tubes with beaded ends, for the purpose specified. 3rd. In a filtering apparatus having perforated tubes covered with filtering cloth turned within the said tubes, and supported by tapering plugs and nozzles, the employment of elastic packing rings placed between the ends of the tubes and the said plugs or nozzles to form tight joints, and to prevent the cutting of the filtering material, substantially in the manner described. 4th. The improved filtering apparatus, constructed and arranged to operate substantially as hereinbefore described and illustrated in the accompanying drawing.

No. 29,491. Boot and Shoe Vamp.

(*Piedpointe de chaussure.*)

Pierre Ouquette, Montreal, Que., 11th July, 1888; 5 years.

Reclame.—Un nouvel article de manufacture, une chaussure formée d'une empeigne A, a, a1, a2, a3, a4, a5, a6, c, d, e, f et d'un morceau B, g pour servir à en compléter la partie postérieure, le tout tel que ci-dessus décrit et pour les fins sus-mentionnées.

No. 29,492. Hay Elevator and Carrier.

(*Monte-foin.*)

The U.S. Wind Engine and Pump Company, (assignee of William H. Burnham and John H. Miller), Batavia, Ill., U.S., 11th July, 1888; 5 years.

Claim.—1st. An improvement in hay elevators and carriers, consisting of the lower carrier frame M, B made in two parts, and provided on its internal opposite portions with catches I, L, and the parts M, M', having rocker convex lower bearing-surfaces, in combination with the upper carrier-frame A having an annular bearing at its lower end, and a flange F for the support of the parts M, and the flange provided with notches N which engage the catches I, L, as specified. 2nd. The trip lever E provided with a hollow lower portion, and the hollow swivel L having a seat *m* in the top part of the hollow portion, in combination with the rope K secured to the swivel, as specified.

No. 29,493. Process of Manufacturing Iron and Steel. (*Procédé de fabrication du fer et de l'acier.*)

Riley P. Wilson, Franklin J. Wall, Franklin A. Thurston, Thomas L. Bibbins and William L. Flanagan, New York, N.Y., U.S., 12th July, 1888; 5 years.

Claim.—1st. The herein described improvement in the art of treating metal, which consists in subjecting the molten metal in charges to a gentle air-blast through the same, and simultaneously therewith maintaining from a separate source an excess of combustible carbonaceous matter in the gases within an inclosed chamber above the molten charge, substantially as and for the purpose described. 2nd. The process herein described for treating impure iron for the manufacture of wrought iron or steel, the same consisting in subjecting the impure iron while in a molten state to the action of an air blast, in order to oxidize and carry off the impurities, and simultaneously subjecting the iron to the action of a reducing atmosphere of hydrocarbon gas or vapor held above the surface of the molten metal, substantially as specified.

No. 29,494. Seal Lock. (*Serrure à cachet.*)

Daniel E. Doherty, (assignee of Perry Brown), Louisville, Ky., U.S., 12th July, 1888; 5 years.

Claim.—1st. A seal lock provided with a defacer moving in line with the bolt, and means for moving said defacer to destroy the seal before the bolt is moved, as set forth. 2nd. The combination, with the bolt and the hasp engaging the same, of a defacer moving in line with the bolt, and means for operating said defacer to cause it to engage and operate the bolt, as set forth. 3rd. The combination, with the bolt and the defacer moving in line therewith, but in bearings independent of the bolt, of means for engaging said defacer to move the same to cause it to destroy a seal before engaging the bolt, substantially as described. 4th. The combination, with the bolt and the defacer having a limited loose connection therewith, of a hinged cover and a hasp carried thereby to engage said bolt, substantially as described. 5th. In a seal lock, the combination, with a spring actuated bolt and the spring actuated defacer having a limited loose connection therewith, of a hinged cover and a hasp carried thereby and formed with a transverse groove, substantially as and for the purpose specified. 6th. The combination, with the slotted case and the defacer provided with teeth working through the slots in said case, of a guide having a stem working in guides in said case, of a bolt moving in guides in said case, and having a limited loose connection with said defacer, a hasp engaging said bolt independent of the defacer, and means for moving said defacer to destroy a seal before moving the bolt, substantially as described. 7th. In a seal lock, the combination, with the case having a slotted diaphragm, as described, of a defacer having a stem working in a guide on one side of said diaphragm, and an arm at right angles to said stem carrying teeth working in the slots of the diaphragm, substantially as and for the purpose specified. 8th. In a seal lock, the combination, with the case, the seal and the plate B, of elastic blocks secured to said plate to press upon said seal, substantially as and for the purpose specified. 9th. The combination, with the case having slotted diaphragm and half-barrel open at one side, as shown, of the defacer having a stem working in said half-barrel, and a right-angled extension working in the cut-away portion of said barrel, and carrying teeth working in the slots of the diaphragm, substantially as described. 10th. The combination, with the case having a diaphragm *a* and half-barrel *b* open at one end, and formed with ledge *c*, and tapering seat *d* of the back plate formed with half-barrel *l*, and wedge-shaped lug *g* engaging said seat, substantially as shown and described. 11th. The combination, with the case having diaphragm *a*, stud *c* and half-barrel *b*, of the bolt having a stem working in said half-barrel, a slot engaging said stud and provided at its opposite end, with extensions *e* *g* formed with downwardly extending lugs *h*, substantially as and for the purpose specified.

No. 29,495. Self-Locking Attachment for Fare Boxes. (*Fermeture automatique de boîte à billets.*)

James H. Claspy and Jesse W. Cuieppor, Atlanta, Ga., U.S., 12th July, 1888; 5 years.

Claim.—1st. In a cash-box for street cars, the combination, with the spring lock provided with the locking hooks *l* and the guide-pin *a*, of the key *k*, said pin being so placed as to guide the key when it enters the lock, and retain it in its proper position to act on both locking hooks simultaneously, as set forth. 2nd. In a cash-box for street cars, the combination, of the key *k*, hollow piston *l*, spring *l'*, and slotted inclosing tube *l''* all arranged and adapted to rotate and the key when the piston is forced back upon the spring, as set forth.

No. 29,496. Lantern Guard. (*Garde-lanterne.*)

Lewis F. Botts, The R. E. Dietz Company, New York, and The Steam Gauge and Lantern Company, Rochester, N.Y., U.S., 12th July, 1888; 5 years.

Claim.—1st. The combination, with the tubular lantern frame having its base provided with a burner, of a globe supporting plate surrounding the burner, and a rigid guard secured to said plate open at the top and provided on the front side of the lantern frame, with a depression through which the globe can be inserted and removed, substantially as set forth. 2nd. The combination, with the tubular lantern frame having its base provided with a burner, of a globe supporting plate surrounding the burner, and rigid oblique guard bars secured with their lower ends to said plate, and having their raised portions arranged opposite the minor sides of the tubes, substantially as set forth.

No. 29,497. Instrument for Curing Meat.

(*Appareil pour saler la viande*)

The National Curing Tube Company, (assignee of John J. Bailey,) New York, N.Y., U.S., 12th July, 1888; 5 years.

Claim.—1st. A slotted tubular conduit for brine in salting meat, having a tapering penetrating point integral therewith, and slotted or open longitudinally, substantially as set forth. 2nd. The tubular conduit for the brine in salting meat, having a point at one end, slots or openings along the tube, an open end, and head at the other end, and holes around the tube adjacent to the head, substantially as specified. 3rd. A conduit for brine in salting meat consisting of a tube of sheet metal, having portions of the metal at one end cut out at opposite points, and the remaining portions swaged nearly together and forming a tapering slotted or open penetrating point, substantially as described.

No. 29,498. Machine for Regulating Electricity. (*Machine à régler l'électricité.*)

James P. Norton, St. Thomas, Ont., 17th July, 1888; 5 years.

Claim.—1st. The combination of the rotary roll E, and the spiral contact strip D, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the contact points I, I, I, and the spiral contact strip D, substantially as and for the purpose hereinbefore set forth.

**No. 29,499. Hay and Grain Cock Weather-
Shield.** (*Couverture de meule de foin et de grain.*)

John A. Symmes and Luther R. Symmes, Sherbrooke, Que., 17th July, 1888; 5 years.

Claim.—A cover for hay cocks and grain stacks, consisting of a rigid seamless radially corrugated waterproof paper pulp shield of concavo-convex shape, substantially as described and shown.

No. 29,500. Railroad Ticket.

(*Billet de chemin de fer.*)

Richard R. Metheny, Grand Rapids, Mich., U.S., 17th July, 1888; 5 years.

Claim.—1st. The railroad ticket made in two parts, one part containing the conductor's memorandum, and the other the passenger's check, the two parts containing detachable dollar and detachable cent columns, the detachable cent column being placed between the passenger's check and the conductor's memorandum, and the line of detachment at the side of any cent column separating the passenger's part from the conductor's part, substantially as described. 2nd. A railroad ticket which is constructed in two parts, one for the conductor and one for the passenger, and which is provided on the conductor's part with blank spaces for the names or numbers of the stations at the beginning or ending of the trip and for the number of the ticket, and on the passenger's part with blank spaces for the name or number of the terminal station and the number of the ticket, said two parts of the ticket being also provided with columns of figures, the figures representing dollars being arranged at right angles to the column representing cents, and the cent columns placed between the passenger's part and the conductor's part, said columns of figures being divided into small spaces which are enclosed by lines of perforations, and the passenger's part when the ticket is separated containing in addition to the parts above named a memorandum of the exact amount paid by the passenger being a complete memorandum and passenger check, substantially as described. 3rd. A railroad ticket provided upon its face with columns of figures representing dollars and cents, said columns being divided into small spaces which are enclosed by lines of perforations, and provided with double sets of figures varying in size and representing the highest and lowest amounts paid for fare, said double sets of figures being so arranged with respect to each other that when the ticket is separated into two parts, the passenger's part or check will represent in large sized figures the amount of fare paid, and the conductor's part or memorandum will contain the same information in the small sized figures, which are arranged in the next adjacent spaces in the dollar and cent columns, substantially as described. 4th. A railroad ticket which is constructed for separation into two parts, one for the conductor and one for the passenger, and which is provided on the conductor's part with blank spaces for the names or numbers of the stations at the beginning and ending of the trip, and for the number of the ticket, and on the passenger's part with blank spaces for the name or number of the terminal station and the number of the ticket, the said two parts of the ticket being also provided with columns of figures representing dollars and cents, said columns being divided into smaller spaces which are enclosed with lines of perforations, and provided with double sets of figures varying in size and representing the highest and lowest amounts paid for fares, said double sets of figures being so arranged with respect to each other that when the ticket is separated into two parts, the passenger's part or check will represent in large sized figures the amount

of fare paid, and the conductor's part or memorandum will contain the same information in the small-sized figures which are arranged in the next adjacent spaces in the dollar and cent columns, substantially as described. 5th. A railroad ticket which is constructed for separation into two parts, one for the conductor and one for the passenger, and which is provided on the conductor's part with blank spaces for the names or numbers of the stations at the beginning and ending of a trip, and for the number of the ticket, and on the passenger's part with blank spaces for the name or number of the terminal station and the number of the ticket, the said two parts of the ticket being also provided with columns of figures arranged at right angles to each other and representing dollars and cents, said columns being divided into small spaces which are enclosed by lines of perforations, and provided with double sets of figures varying in size and representing the highest and lowest amounts paid for fares, said double sets of figures being so arranged with respect to each other that when the ticket is separated into two parts the passenger's part or receipt will represent in large-sized figures the amount of fare paid, and the conductor's part or memorandum will represent the same information in the small-sized figures, which are arranged in the next adjacent spaces in the dollar and cent columns, substantially as described.

No. 29,501. Ladder. (*Echelle.*)

William B. Ilino, Liverpool, Eng., 17th July, 1888; 5 years.

Claim.—1st. In a folding ladder, the combination of treads a and articulated links b, said links being jointed in the treads at right angles to the line of length of the treads, whereby the links can be folded up in the vertical plane of the ladder, substantially as set forth for the purposes specified. 2nd. In a folding ladder, the combination of treads a consisting of two parallel bars and articulated links b, said links being arranged to lie between the said bars and jointed thereto by pins b₁, and arranged at different distances apart on the said pins in the successive treads of the ladder, whereby the said links can hold up within the space between the bars when the ladder is folded, substantially as set forth. 3rd. A folding ladder of the type herein described having articulated links b, constructed of such length and arranged to overlap each other when folded, substantially as set forth.

No. 29,502. Apparatus for Drawing Corks.

(*Tire-bouchon.*)

William J. Hinchy, Montreal, Que., 17th July, 1888; 5 years.

Claim.—1st. In apparatus for drawing corks, and in combination, the following elements, a sleeve moved in either direction vertically and means for operating same, both carried in suitable bearings, a spindle within such sleeve and moving vertically with it, carrying cork-crew proper, and having helical groove formed on a portion of its length, a nut carried in suitable bearings encircling spindle and having helical thread fitting into groove, means whereby such nut is held firmly during the entire descent and latter part of the ascent of the spindle, and left loose during the first part of the ascent, a bearing surface for the head of the bottle provided in the frame of the apparatus, and a frictional surface for the drawn cork to bear against during the latter part of the ascent of the spindle and screw. 2nd. In apparatus for drawing corks, the combination, with a sleeve carried in bearings and moved in either direction vertically, and a spindle within such sleeve and moving vertically with it, having a helical groove cut on a portion of its length, of a nut carried loosely in suitable bearings encircling said spindle having ratchets formed on it, one at each end, and an interior helical thread corresponding to groove in said spindle, the said ratchets being arranged in opposite or right and left hand order, pawls adapted to engage with said ratchets, and means for operating one of said pawls from the said sliding sleeve so as to free it from the ratchet during a portion of the ascent of said sleeve, as and for the purpose described. 3rd. In apparatus for drawing corks, the combination, with the cork-screw, and means for operating same, as described, of a cork receiving chamber through which the screw passes formed in the frame of the apparatus, and having an open bottom with bearing surface for the head of the bottle, and a movable guide in such chamber for the screw adapted to hold the cork after being drawn, as and for the purposes described. 4th. In combination with apparatus for drawing corks, a support for the bottle consisting of a platform sliding on a bracket secured to the wall beneath the apparatus the meeting surface being at an angle of forty-five degrees.

No. 29,503. Water Power. (*Moteur hydraulique.*)

Abram Gustlin, Boone, Iowa, U.S., 17th July, 1888; 5 years.

Claim.—The combination, with the pipe or conduit having flaring ends, one side of one end being removed, and a gate for closing the other end, and a wheel journalled within the pipe on a crank shaft arranged parallel with the bore of the pipe of the dome, the bracket, the rod having bearings in the dome and bracket, and the pitman connecting the crank shaft and rod, substantially as described.

No. 29,504. Bolt or Material Deliverer.

(*Distributeur de boulons ou de matériaux.*)

Frederick A. Humpidge, Dutton, Ont., 17th July, 1888; 5 years.

Claim.—1st. The combination of the sprocket wheel D and the chain H, rollers B, B, B, and pulley G, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the platform P, lever R, sliding box O, friction pulleys L and E, substantially as and for the purpose hereinbefore set forth. 3rd. The combination of the platform P, lever R, sliding box O, friction pulley L and E, with the sprocket wheel D, chain H, rollers B, B, B, and pulley G, substantially as and for the purpose hereinbefore set forth.

No. 29,505. Cramp-Frame. (*Serre-joints.*)

Paul Goudron, Berthierville, Que., 19th July, 1888; 5 years.

Reclaim.—1o. Dans un serre-joints, le volet mobile A ayant une

mortoise en goucle de cloche D, tel que décrit pour les fins indiquées. 20. Dans un serre-joints, le volet mobile A, ayant une mortoise en goucle de cloche D, et aussi un vis de réglage A, le tout fonctionnant tel que décrit et pour les fins indiquées.

No. 29,506. Joint for Sheet Metal.

(Joint de feuille de métal.)

John G. Battelle, Covington, Ky., U.S., 19th July, 1888: 5 years.

Claim—1st. A sheet of metal provided with similar edged corrugations, each of the said corrugations being so shaped that a line drawn from the center of the top of the corrugation perpendicular to the plane of the sheet divides the corrugation into a narrower outer portion and a wider inner portion, substantially as and for the purposes specified. 2nd. A sheet of metal provided with edge corrugations, in which the outer fold of each edge corrugation has a steeper pitch than the inner fold of said corrugation, substantially as and for the purposes specified. 3rd. The combination of two sheets of metal, each provided with edge corrugations, and each of the said corrugations having an inner fold C and an outer steeper fold B, and the fold B of the corrugation of the lower sheet resting on the sheathing or other support, and fastenings passing through the tops of the said corrugations and securing the sheets to the support, substantially as and for the purposes specified. 4th. A sheet of corrugated metal provided with edge corrugations, in which the outer fold of each edge corrugation has a steeper pitch than the inner fold of said corrugations, the edge corrugations being higher than the other corrugations of the sheet, substantially as and for the purposes specified. 5th. The combination of two sheets of metal, each provided with an edge corrugation, the edge corrugation of one sheet being narrower than the edge corrugation of the adjoining sheet, the narrower corrugation pressed down upon and clasping the wider corrugation and fastening, substantially as described, whereby the upper corrugation is held to the under corrugation, substantially as and for the purposes specified. 6th. The combination of two sheets of metal provided with edge corrugations, the corrugation on one edge of each sheet being slightly wider than the corrugation on the other edge of the sheet, and the two sheets being united by having the narrower corrugation of one sheet overlap the wider corrugation of the other sheet, substantially as and for the purposes specified. 7th. In a joint for sheet metal roofing and siding, the under arch or corrugation having the edges B, and a backing or support for the joint, the edge B resting upon the said backing in a direction at or nearly at right angles to the surface of the backing, substantially as and for the purposes specified. 8th. The combination of two sheets of metal, each provided with edge corrugations, and each of the said corrugations having an inner fold C, and an outer steeper fold B, and the fold B of the corrugation of the lower sheet resting on the sheathing or other support, and fastenings passing through the tops of the said corrugations and securing the sheets to the support, and said joint provided with a cementing substance between the corrugations and constituting a packing which prevents the intrusion of water around the nail holes, substantially as and for the purposes specified.

No. 29,507. Washing Machine.

(Machine à blanchir.)

Frederick D. Harding, Baldwin, Me., U.S., 19th July, 1888: 5 years.

Claim—1st. A washing machine consisting of a box B provided with standards C, C, a yielding frame pivoted to or in said standard, and at the lower end of the frame, a corrugated roller G, in combination with a corrugated rubbing floor M in the lower part of the box B, constructed and arranged for co-joint operation in connection with a pump, substantially as described and for the purpose set forth. 2nd. In combination, with a washing machine, a soap box arranged in connection with a vibrating frame to hold a bar or piece of soap in contact with a corrugated roller G pivoted in said frame and operating conjointly therewith, essentially as set forth. 3rd. In a washing machine, a pump attached to the box B and operated by an arm in connection with the frame D, the inlet end of said pump being submerged in either the water in the tub V or in said box and the discharge pipe arranged to one side of the pump with an outlet directed to and above the floor M, in combination with the vibrating roller G and soap box U, all substantially as shown and for the purpose set forth.

No. 29,508. Combination of Knives.

(Combinaison de couteaux.)

Richard Daine, Halifax, N.S., 19th July, 1888: 5 years.

Claim—The combination of blades, letters A and B, in the one handle C, with the adjustable back D, substantially as and for the purpose hereinbefore set forth.

No. 29,509 Explosive. (Explosif.)

Rudolf Sjöberg, Stockholm, Sweden, 19th July, 1888: 5 years.

Claim—1st. The preparation of an explosive compound from nitrate of ammonia, by mixture with a solid melted hydrocarbon and with a liquid hydrocarbon melted, or with solid hydrocarbon and pure or similarly gelatinized chlorate of potash, substantially as described. 2nd. The treatment of ammonia salts by mixture with melted solid hydrocarbon, or with liquid and solid hydrocarbon, substantially as herein described. 3rd. An explosive compound consisting of ammonia salts, hydrocarbon and chlorate of potash, compounded as herein set forth.

No. 29,510. Electric Printing Telegraph.

(Télégraphie électrique autographique.)

Samuel Van B. Essick, Brooklyn, N. Y., U. S., 19th July, 1888: 5 years.

Claim—1st. In a printing telegraph, the combination, with the keys of the transmitting instrument, of levers o and contact points at

arranged in the main circuit, the scape wheel shaft 25 provided with pins 28 adapted to trip the levers o, and springs 31, and fingers q for holding the levers o in contact with the points s when the circuit is completed, or away from the said points when the circuit is broken substantially as described. 2nd. In a printing telegraph transmitter the combination, with two banks of keys representing two sections of the alphabet, of switching mechanism adapted to transmit to the line and distant receiving instrument currents of different strength, and electro-magneto type-wheel shifting devices adapted to be operated by a strong current, substantially as described. 3rd. In a printing telegraph system, the combination of a transmitter provided with two banks of keys, each bank representing two series of characters, a movable type-wheel provided with two rows of characters corresponding to the series of characters of the transmitting instrument, and means for shifting the type-wheel and holding it in position to secure a correspondence between the impression made by the printing mechanism and the key depressed in the transmitter, substantially as described. 4th. In a printing telegraph system, the combination of a relay in the main line circuit provided with an armature lever, and front and back contacts common to the local circuit and battery, a printing magnet, two local circuits, one adapted to be completed by the forward movement of the relay armature, and the other by the backward movement of the armature, a printing magnet arranged in one of the local circuits, a circuit closer in the printing magnet circuit arranged to be held open by the type-wheel revolving mechanism, and a type-wheel shifting magnet arranged in the other circuit, substantially as described. 5th. In a printing telegraph, the combination of the magnet 103 placed in the local circuit and arranged to control the local circuit, the circuit closer operated by the type-wheel mechanism, the angled lever 104, carrying the armature of the bar 109 pivoted to said lever, the arm 108 carrying the printing pad, and pivotally connected with the bar 109, the type-wheel 32, and means for supporting the paper for receiving the impression between the printing pad and the type-wheel, substantially as described. 6th. The combination of the printing magnet 103, the angled armature lever 104, spring 106, the pawl p, pivoted to the said armature lever 104 and provided with the arm p', the latch a pivoted to the lever 104, the paper carriage 95, the ratchet bar 102 provided with the nib 4 and stud 5 and adapted to be engaged by the pawl p', and the spring actuated retaining pawl or ratchet member the pawl p', substantially as described. 7th. In a printing telegraph receiver, the combination of the type-wheel shaft 30, the type-wheel 32 carried thereby and provided with two rows of characters, the type-wheel shifting magnet 110, the lever 111 adapted to engage the end of the shaft 30, the armature 104 attached thereto, the latch 37, shaft 26 provided with a printing 103, armature 104 and angled armature lever 104, the spring 106, and the bar 109 provided with the projection r adapted to engage the arm a, substantially as described. 8th. In a printing telegraph receiver, the combination, with the paper carriage 95, adapted to move in front of the type-wheel 32 of the rollers 96, 97 journaled in the carriage, and adapted to engage the paper to be printed upon the ratchet wheel 98 attached to the shaft of the roller 97, the lever 100 pivoted to the paper carriage pawl 95, pivotally connected with the lever 100, the angled bar 101 fixed to the frame of the instrument, the spring drum 1 5 and the cord 4 attached to the drum and connected with the paper carriage, substantially as described. 9th. In a commutator for printing telegraphs, the combination, with the cylinder shaft of commutator wheels insulated from the shaft peripheries of the commutator wheels, and means for conveying a current to the commutator wheels, substantially as described. 10th. In a printing telegraph, the combination, with the magnets 45, 46 located in the line circuit and provided with an armature common to both magnets, of a pole changer or commutator located in the line circuit and actuating both transmitter and receiver, the pallets 49 and scape wheel 27 of the transmitting station, the magnets 45, 46 provided with an armature common to both magnets, pallets 49 operated by said armature and the scape wheel 27 of the receiving station, substantially as shown and described. 11th. In a printing telegraph, the combination, with the magnets 45, 46 located in the line circuit, and provided with an armature common to both magnets, of a pole changer or commutator located in the line circuit and actuating both transmitter and receiver, the magnets 45, 46 provided with an armature common to both magnets, pallets 49 operated by said armature, the scape-wheel 27 of the receiving station and relay magnets arranged in the line circuit and adapted to control the local circuit, substantially as described. 12th. In a printing telegraph, the combination, with an electric generator of the magnets 45, 46, the pallets 49, scape wheel 27, the toothed wheel 71, the circuit closing lever 73 adapted to close the local circuit at the transmitting station, a similar arrangement of mechanism at the receiving station and the line and local circuit connections, substantially as described. 13th. In a printing telegraph system, the combination, with the electric generator, of magnets 45, 46 in the circuit of the generator, the commutator arranged to be operated by said magnets the transmitting keys m, n, the levers o, the power shaft 25 provided with pins 28, a circuit breaker adapted to be operated by the said pins, a magnetically operated escapement arranged to control the shaft 25 of the transmitting station, and the electro-magnetically operated escapement and printing mechanism of the receiving station, substantially as described. 14th. The combination, with the keys of a printing telegraph, of the circuit closing levers o, contact points s arranged in the line circuit and circuit breaker devices 36, and h and v arranged below the keys and adapted to hold the circuit open so long as the keys are depressed substantially as described. 15th. In a printing telegraph, the longitudinally movable rotating type-wheel shaft, and means substantially as described for revolving and shifting said shaft, a latch for holding the said shaft in position when shifted, a lever for releasing the said latch, and a type wheel carried by the type-wheel shaft, and provided with circulars disposed in parallel circular series around the periphery of the wheel, substantially as described. 16th. In a printing telegraph, a type wheel having the characters of the alphabet divided and arranged in two circular parallel series, a shaft supporting said type-wheel, and means for rotating the said type-wheel and shifting it laterally, so as to bring either series of characters into position for printing, substantially as described. 17th. In a printing telegraph transmitter, the combination

of two banks of keys 84, 85, the bar 86 adapted to be operated by the lower bank of keys and carrying the insulating block 88, the contact points *d, d', d'', f*, carried by the said insulating block, the springs 90, 91 adapted to be operated by both banks of keys and carrying the arm 92, the contact screw *h* and the line and local connections, substantially as described. 18th. The combination, with the circuit wires 127, 142, 143, 128 of the switch 113 provided with two arms 114, 115 insulated from each other, and adapted to be moved simultaneously for shifting the circuit for transmitting and receiving, substantially as described. 19th. In a printing telegraph, constructed as herein described and provided with a slotted lever *o* of a lever 200, the rod 204 and the latch 37 provided with the arm 205, substantially as described.

No. 29,511. Machinery and Process for the Manufacture of Spades, Forks, etc. (*Appareil et procédé de fabrication des bêches, fourches, etc*)

Peter Lion, Mümling Gumbach, Germany, 19th July, 1888. 5 years.

Claim.—1st. In the manufacture of spades, shovels, forks and the like implements, the method of forming the handle socket integrally therewith, by subjecting the blank out of which the entire implement is to be formed, first to the action of press dies for forming the neck and shoulders and imparting an approximate outline to the portion intended for the socket, then hollowing or coring that portion of the blank thus partly wrought by the action of a centre punch to form the hollow while holding the blank in dies, and then subjecting the partly wrought portion of said blank to repeated rollings in a pair of rolls having a series of shouldered profiles of decreasing calibre over and while held upon mandrels moving in unison with the rolls, substantially as set forth. 2nd. In the manufacture of spades, shovels, forks and the like implements, the machinery consisting of the die press having dies B, *b*, one being fast and the other movable by means of an eccentric upon a shaft, the centre punch press consisting of dies D, *D* held in a box C and screw E, of the centre punch F actuated by an eccentric mounted upon a shaft and the rolls G, *G* having a series of shouldered profiles of decreasing calibre, in conjunction with mandrels H, with rack box H operated by a spur wheel I mounted upon a shaft and adapted to move the mandrel in unison with the rolls and to extract the same, substantially as set forth. 3rd. In the manufacture of spades, forks, shovels and the like, the combination of a fast die B, a movable die *b*, eccentric *B*, moving said die *b*, and the shaft *B*, carrying said eccentric, substantially as set forth. 4th. In the manufacture of spades, forks and the like, the combination of a box C containing the dies D, *D*, the fast die *D* and movable die *D*, contained in said box, screw E for securing the movable die *D*, the centre punch F, eccentric *F* on said centre punch, and the shaft *F* upon which said eccentric is mounted, substantially as set forth. 5th. In the manufacture of spades, forks and the like, the combination of the rolls G, *G*, having a series of profiles 1, 2, 3 and 4, of decreasing calibre, each of said profiles formed of a concentric portion of the roll *g* having a small diameter and an eccentric portion *g*, said portions joined by the shoulders *g*₁, *g*₂, a mandrel H opposite each profile with a rack box H, a spur wheel I having teeth upon a part of its circumference only and adapted to project and retract said mandrel and moving the same in unison with said rolls and the shaft I upon which said wheel is mounted, substantially as set forth.

No. 29,512. Apparatus for Manufacturing Hollowware from Pulp. (*Appareil de fabrication des ustensiles en pâte à papier*)

Frank B. Howard, Montreal, Que., 19th July, 1888. 5 years.

Claim.—1st. In an apparatus for the manufacture of articles of hollowware from pulp, the combination, with a mould provided with filtrations as described, of an elastic body adapted to be expanded within the said mould, a pipe for conveying the fluid within the elastic body for expanding the same, and means for bringing the said elastic body to the required position within the mould, substantially as and for the purpose set forth. 2nd. In an apparatus for the manufacture of articles of hollowware from pulp, the combination, of the mould A, A, head *K*, valve *l*, spindle *m*, projection *n*, pipe *o*, stuffing box *p*, nut or collar *q*, spring *r*, head *s*, thumb *t*, elastic tube *u*, head *v* having spindle *w*, pipe *x*, elbow *y*, the whole constructed and arranged substantially as described. 3rd. In an apparatus for the manufacture of articles from pulp, the combination, with a mould provided with filtrations, as described, of an elastic body adapted to be expanded within the mould, a pipe for conveying fluid within the elastic body for expanding the same, and nipple for closing the mould and bringing the elastic body to the required position within the mould, the said pipe and nipple being further provided with projections *o*, valve *p*, pipe *m*, and passage *l*, the whole constructed and arranged substantially as described. 4th. In an apparatus for the manufacture of articles from pulp, the combination, with a mould provided with filtrations, of an elastic bag within said mould, and a pipe for conveying fluid to the inside of said bag for expanding the same, substantially as and for the purpose set forth.

5th. In an apparatus for the manufacture of articles from pulp, the combination, with a mould having all its surfaces provided with filtrations, of an elastic bag within said mould, said elastic bag being situated, as described, within the mould, so that upon being inflated it will carry the pulp contained within the mould to, and compress it upon the whole of the inner surface or surfaces of the mould, and a pipe for conveying fluid to the interior of said bag for expanding the same, substantially as and for the purpose set forth. 6th. As an improved article of manufacture, an enclosed hollow article formed of pulp, having the pulp that forms the enclosed hollow article, vessel or casing integral throughout, substantially as described.

No. 29,513. Paper-Cutter. (*Couteau à papier*)

Frederick W. Drost, St. Louis, Mo., U.S., 20th July, 1888. 5 years.

Claim.—1st. In a paper-cutter, in combination with the roll of paper, of standards having inclined slots, and a knife resting on said roll of paper and guided by said inclined slots, whereby the gravita-

tion of the knife is permitted while its opposite motion is resisted, substantially as set forth. 2nd. In a paper-cutter, the combination, of the slotted standards, bar fitting in the slots of the standards, knife secured to the bar, and a roll of paper journalled in the standards beneath the knife, substantially as and for the purpose set forth.

No. 29,514. Harrow. (*Herse*)

Abram W. Stevens, Auburn, N.Y., U.S., 21st July, 1888. 15 years.

Claim.—1st. A bar for a harrow-frame elongated in its horizontal cross section, having a convex wearing-surface, the central portion of said bar being below the horizontal plane of its edges, and adapted to sustain greater wear than the other portions, substantially as described. 2nd. A bar for a harrow frame of crescent-shape in cross-section, substantially as described. 3rd. In a spring tooth harrow, the combination, with intersecting draft and cross-bars, of spring-teeth connected to said harrow, said harrow being also provided with teeth guards extending downwardly from a point adjacent to the point at which the said teeth are connected to the harrow, a portion of said guard lying intermediate the intersecting bars and holding them out of contact with each other, substantially as described. 4th. A harrow consisting of intersecting bars, a supporting connection holding them separated, and a tooth-clip permitting of the longitudinal adjustment of the tooth in a horizontal direction, said tooth-clip being located in substantially the vertical plane of the supporting connection, substantially as described. 5th. A harrow frame consisting of draft and cross bars, one of said bars being depressed out of the plane of the main portion of the bar at each of the points of crossing, and a vertical post connecting the said bars at such points and holding them out of contact with each other, substantially as described. 6th. A harrow frame consisting of draft-bars having downwardly deflected portions, straight cross-bar, and vertical posts secured to said draft and cross-bars at the points of deflection, substantially as described. 7th. In a harrow, a post for connecting and holding the draft and cross-bars out of contact with each other, said posts at their upper ends having flanges extending above each side of the bar for engagement therewith, substantially as described. 8th. In a harrow, a post intermediate the draft and cross-bars, and provided with seats for attachment to said bars, and a tooth-clip permanently connected with the post and in the vertical plane of the same, substantially as described. 9th. In a harrow, a post for connecting draft and cross-bars provided with flanges extending laterally from each side of the base of said post for attachment to one bar, a substantially horizontal seat above said flanges for attachment to the other bar and tooth-clip above said post, and permanently secured thereto, substantially as described.

No. 29,515. Harrow. (*Herse*)

Le Roy W. Stevens, Auburn, N.Y., U.S., 21st July, 1888. 15 years.

Claim.—1st. The combination, with a harrow frame consisting of intersecting draft and cross-bars, the said draft bars being provided with arched or upwardly deflected portions, of a leveling bar in front of said arched or upwardly deflected bars, substantially as described. 2nd. A harrow frame composed of intersecting draft and cross bars, the front draft bar being straight throughout the operative portion of its length, and the draft bars in rear thereof being provided with arched or upwardly deflected portions, substantially as described. 3rd. A harrow frame composed of intersecting draft and cross bars, the first or front bar or bars being straight throughout the operative portion of their length, the draft bars in rear thereof and the cross bars being provided with arched or upwardly deflected portions, substantially as described. 4th. A harrow tooth clip having vertically disposed walls grooved to receive the edges of the tooth, the bottom of said groove diverging from a straight line, and an adjustable connection for said walls, substantially as described. 5th. A harrow tooth clip having vertically disposed walls grooved to receive the edges of the tooth, the bottom of said groove being bowed outwardly at the centre of the clip, and a central connecting bolt, substantially as described. 6th. A harrow frame consisting of draft bars having substantially horizontal faces on the under side and intersecting cross-bars, the under faces of said draft bars being provided with a longitudinal rib or ribs between their edges forming a wearing or runner surface, substantially as described. 7th. A harrow frame consisting of draft bars provided on their under sides with ribs forming wearing surfaces, and intersecting cross bars arched between the draft bars, substantially as described. 8th. A harrow tooth clip having a rigid single base portion for attachment to the harrow frame, and yielding vertically disposed flanges or side walls extending from said base portion, and an adjustable connection connecting said flanges or side walls, substantially as described. 9th. A harrow tooth clip having a rigid base portion with side walls or flanges rigidly connected therewith, the said base portion rigidly connecting said flanges or side walls, one of said side walls being constructed to yield laterally, and an adjustable binder connecting said walls, substantially as described. 10th. A harrow tooth clip having vertically disposed flanges or walls for grasping the sides of the tooth, said flanges or walls on their inner sides diverging out of a direct line, and an adjustable connection extending from one flange or wall to the other, substantially as described. 11th. A harrow tooth clip having vertical flanges grasping the sides of the tooth, said sides being further apart at their centres than at their ends, and a central attaching bolt, substantially as described. 12th. A harrow tooth clip provided with vertically disposed walls or flanges having a construction to engage the edges of a tooth, and a construction to engage the edges of a cross bar of the harrow frame, and a bolt connecting said walls or flanges, and drawing both upon the edges of the tooth and cross bar, substantially as described. 13th. A harrow tooth clip consisting of two vertically disposed walls or flanges, provided with a construction to engage the edges of a harrow tooth, and lugs to engage the edge of a cross bar, and an intersecting draft bar, and a connecting bolt drawing said walls or flanges upon the edges of the tooth and cross bar, substantially as described. 14th. In a harrow, the combination, with a harrow frame consisting of grooved or channelled draft bars, and intersecting cross bars, and a tooth clip provided with a lug or rib fitting

the groove or channel of the bar beneath the same, substantially as described. 15th. A harrow frame consisting of grooved or channelled draft bars, and cross bars provided with lugs or ribs to engage the grooves or channels of the draft bars, substantially as described. 16th. In a spring tooth harrow, the combination, with intersecting draft and cross bars rigidly joined at the point of intersection, of spring teeth connected to said harrow at a point adjacent to the intersection of said bars, said bars forming guards or arms which extend outward and upward from a point adjacent to the point of intersection of said bars, one or more of said arms or guards being corrugated or ribbed, substantially as described. 17th. The combination, with a harrow frame having channelled draft bars, of drawing ears provided with ribs or lugs to engage the channels of the draft bars, substantially as described.

No. 28,516. Counter or Recording Device.

(*Calculateur ou appareil à enregistrer.*)

Adolph Berrenberg, Somerville, Mass., U.S., 23rd July, 1888; 5 years.

Claim.—1st. In counters, the combination of the disk B having notches V, V, and a pin L, and the lever and pawl device R R₂ for operating the same, in combination with the disks C, D, E, F, G, H, each having slots K, K, K, pins L and pins S, all operating together substantially as described and for the purpose set forth. 2nd. In counters, the combination of the disks B, C, D, E, F, G, H having pins S, S, with the arm S₁, hub S₂ and springs S₃, all operating substantially as described and for the purpose set forth. 3rd. In counters, the combination of the disks B, C, D, E, F, G, H, having pins L, with the springs M, M, and cam pieces P, P, all operating substantially as described and for the purpose set forth. 4th. In a counter, the combination of the swinging arm W, W, shaft W₂ and crank W, with the gear R₄ disks B₁, C, D, E, F, G, H, all operating together, substantially as described and for the purpose set forth.

No. 29,517. Artificial Stone. (*Pierre artificielle.*)

John Lorenz, Milwaukee, Wis., U.S., 23rd July, 1888; 5 years.

Claim.—As an improvement in artificial stone, the compound formed from a mixture of five parts ashes, four parts cinders and one part cement, united in the manner substantially as hereinbefore set forth.

No. 29,518. Disk Harrow. (*Herse à disque.*)

Edward C. Boyer, Dayton, Ohio, U.S., 23rd July, 1888; 5 years.

Claim.—1st. In a disk harrow, the combination of the part A, with tongue C rigidly attached, the parts B, B having arms G with journals, the hinges u, u with journals for the spools t, said spools being supported on the gang shafts, the pin O held in arm F as a support to the gang frames, and drag bars D, D secured to the tongue, substantially as set forth. 2nd. In a harrow frame, the plate wheel V held on a pivot in a slot of the arm F attached to the tongue to relieve the friction of the rounded heads of the bolts h, which hold the gang disks, substantially as set forth. 3rd. In a disk harrow, the combination, of the arm F attached to the tongue, the supporting lugs u, u attached to parts B, B of the frame, and the pin O to engage the lugs of said lugs, and the end of said arm to unite the inner ends of the disk gangs, substantially as set forth. 4th. In a disk harrow, the combination of part A, with arm M to engage loop n, the arm F of the tongue, drag-bars D, D attached to a lever pivoted on the tongue, hinges u, u with pin O to unite them, the arms G, G, and disk gangs, substantially as set forth. 5th. The cleaner r pivoted to the under side of part B, and held against the spiral disk by the spiral spring W, substantially as set forth. 6th. In a disk harrow, the circular disks S being spirally curved laterally, and held between spools t having spirally abutting faces to engage said disks, these parts in combination with the frame of part A with tongue and parts B, B to hold the two gangs of disks, substantially as set forth.

No. 29,519. Mug, Cup, etc. (*Pol, tasse, etc.*)

Zachary T. Hall, Philadelphia, Penn., U.S., 23rd July, 1888; 5 years.

Claim.—1st. A mug constructed of concentric walls a, t formed of metal, the outer wall being embossed and the inner wall plain, substantially as described. 2nd. A mug having its body formed of an inner plain wall and an outer embossed wall, the inner wall having a bead extending over the top of the outer wall, and the bottom having both walls resting thereon, and provided with a peripheral flange embracing a portion of the outer wall and secured thereto, substantially as described.

No. 29,520. Combined Pencil Sharpener, Ink Eraser and Point Protector. (*Taille-crayon, guttoir et cache-pointe combinés.*)

Henry Edgarton, Shirley, Mass., U.S., 23rd July, 1888; 5 years.

Claim.—A pencil sharpener ink eraser and point protector consisting of the sheet metal tube A, provided with the curved opening F having an inwardly projecting segmental cutting edge B, and the incline curved cutting edge C, substantially as and for the purposes set forth.

No. 29,521. Pendant Set for Watches.

(*Queue de montre à remonter.*)

Jules Duplain, Montreal, Que., 23rd July, 1888; 5 years.

Claim.—The combination, in a watch arranged for stem winding and hand setting by the crown g, of a stem A₁ having a collar m, said stem being attached to the crown g, with crown p and with spring S having catch k and opening r, through which the end t of the stem A₁ passes, the whole substantially as described.

No. 29,522. Blackboard and Writing Desk.

(*Tableau noir et pupitre.*)

Otto M. Mitchell, Marathon, N. Y., U.S., 23rd July, 1888; 5 years.

Claim.—1st. In a combined blackboard and writing desk, a frame provided with two or more compartments, said main frame having perforations in one of its side pieces, in combination with any independent and removable copy-holder frame adapted to be removed from one of said compartments, or maintained thereon so that operating knobs of the rollers thereof will project through the main frame, substantially as shown and for the purposes specified. 2nd. In a combined blackboard and writing desk, a main frame provided near its upper portion with vertical guide-strips B, and near its lower portion with supports a, a board having bars b with laterally projecting pins formed thereon attached near the edge of the board so as to engage with the guide-strips B, and plates b₁, with which the pivoted arms I engage, so as to maintain the board in an inclined position with respect to the main frame, substantially as shown. 3rd. In a combined writing-desk and blackboard, the main frame having pivoted thereto horizontally swinging arms, with strips h and pieces h₁, in combination with the board A, having bars b with laterally projecting pins attached thereto, whereby said board can be maintained by said arms in an almost horizontal position with either side uppermost, substantially as shown. 4th. A blackboard provided on its surface with semi-spherical depressions, arranged so as to form lines, figures or letters, substantially as and for the purpose specified. 5th. In combination with the main frame provided with horizontally swinging arms, said arms having projecting portions h, attached thereto, and a board adapted to be supported by said arms, and projecting portions h, substantially as shown and for the purpose set forth. 6th. In a blackboard or writing desk provided with pins which project from the side pieces of the main frame, supporting legs consisting of a bar K having key-hole slots which engage with the projecting pins of the main frame, legs K₁, K₂ attached at their upper end to the bar K by spring plates, and a latch bar L pivoted to the bar K and adapted to engage with projecting pins secured to the legs, substantially as shown and for the purpose set forth. 7th. In a combined blackboard and writing desk, the side strips B₁ and B₂ having attached thereto metallic strips E having one of the vertical edges bent at right angles and the corners bent so as to engage the inner sides of the side pieces, transverse board C, having notches c, a board A having bars b attached near the upper edge thereof, the end of said bars having upwardly and outwardly projecting portions which are adapted to engage with the inner edges of the strips E, and bear upon the portion of the board C adjacent to the notches therein, and arms for holding the board in an inclined position with respect to the main frame, substantially as shown and for the purpose set forth.

No. 29,523. Double-Acting Submerged Force Pump. (*Pompe foulante submergée à double effet.*)

Loran E. Walley, Hopewell, N.S., 23rd July, 1888; 5 years.

Claim.—1st. In a double-acting submerged force pump, the pump chamber consisting of the upper part A and lower part Z bolted together, the upper part A having the valve f, and the inclined partition a provided with valve c, and openings for the pump tube and pump rod, and the lower part Z consisting of the piston cylinder A₁, water passage C connected by aperture d, and the valve chamber B having valve v and a valve e₁ intermediately of said two parts, as set forth. 2nd. A pump chamber comprising the upper part A, and inclined partition a integrally cast, said partition having a port e provided with a valve v, and the part A having a port b provided with valve f, and a leak opening s into the hole for the pump rod, in combination with a lower part Z bolted to said part A and comprising a piston chamber A₁, passage C and chamber B, valve v as set forth.

No. 29,524. Hair Restorer.

(*Préparation pour les cheveux.*)

Zozimo Ricard, Montreal, Que., 23rd July, 1888; 5 years.

Reçu.—Une eau pour cheveux composée d'un mélange d'alcool rectifié, et de racines de sang dragon, préparé dans les proportions et de la manière indiquées, ci-dessus et pour les fins sus-mentionnées.

No. 29,525. Air Heating Device for Cars, etc. (*Calorifère à air pour chars, etc.*)

Lyman P. Converse, Chicago, Ill., U.S., 23rd July, 1888; 5 years.

Claim.—1st. In an air-heating device, the combination of a fire-pot A, a jacket D surrounding the fire-pot and affording a chamber p, a heater E supported directly over the fire-pot and comprising a casting F provided with an opening m, a casting G provided with an opening m₁ and surmounting the casting F, ribs between the two castings about the openings therein affording a circuitous chamber having communication with the surrounding atmosphere, and a casting H surmounting the casting G and provided with an opening m₂, a smoke-flue I extending through the openings m, m₁ and m₂, and a hot air flue K extending from the casting H around the smoke-flue and opening into the inclosure to be heated, substantially as described. 2nd. The combination, with a car having an opening r in its floor, of a heating device comprising a fire-pot A, and a jacket D surrounding the fire-pot underneath the car and affording a chamber p, a chute L having its inlet in the floor of the car, and leading from the car-floor into the fire-pot, a heater E supported on the upper side of the car-floor directly over the fire-pot, and comprising a casting F provided with openings m and with openings a leading into the chamber p, a casting G provided with an opening m₁ and surmounting the casting F, ribs between the two castings about the openings therein affording a circuitous chamber having communication with the surrounding atmosphere, and a casting H surmounting the casting G and provided with an opening m₂, a smoke-flue I extending through the openings m, m₁ and m₂ and car, and a hot-air flue K extending from the casting H around the smoke-flue an opening into the interior of

the car, substantially as described. 3rd. The combination, with a car having an opening γ in its floor, of a heating device comprising a fire-pot A, and a jacket D surrounding the fire-pot underneath the car and affording a chamber p , a heater E supported on the upper side of the car-floor directly over the fire-pot, and comprising a casting F provided with an opening m , and with openings n leading into the chamber p , a casting G provided with an opening m and surmounting the casting F, ribs between the two castings about the openings therein affording a circuitous chamber having communication with the surrounding atmosphere, and a casting H surmounting the casting G and provided with an opening m_2 , a smoke-flue I extending through the openings m , m_1 and m_2 and car, a hot-air flue K extending from the casting H around the smoke-flue and opening into the interior of the car, and a material M non-conductive of heat surrounding the hot-air flue and affording an air-space between it and the flue K, substantially as described.

No. 29,526. Water Closet Apparatus.

(Appareil de latrines à l'eau.)

David S. Keith and Alexander Keith, Toronto, Ont., 23rd July, 1888; 5 years.

Claim.—1st. An improvement in a water closet apparatus, the cistern A containing a syphon E which is operated by the depression of a mass D, or of a mass F F in the water, as herein described and for the purpose specified. 2nd. The improvement in a water closet apparatus which consists of hinging the seat M to lugs L formed in the wall of the closet, and connecting the seat M to operate the action of the syphon cistern, as herein described and for the purpose specified. 3rd. In a water closet the fan b having an opening above the level of the water in the basin, and pointing towards the centre of the bottom of the basin, substantially as described herein and for the purpose specified. 4th. In a water closet apparatus, the connection of the closet to the soil pipe C, formed by the flange with the channelled recess C containing air or other viscous matter, substantially as described and for the purpose specified.

No. 29,527. Extension Fire Ladder.

(Echelle à incendie à rallonge.)

Frederick A. Warner, Halifax N. S., 23rd July, 1888; 5 years.

Claim.—1st. In an extension ladder, the frame E, the shaft F supported by the said frame E, means for revolving the said shaft, the pulleys F_1 secured to the said shaft F, and the toothed segments F_2 supported on the said frame E, in combination with the ladder G fulcrumed on the said shaft F, the shaft F_4 mounted on the said ladder G, the pinions F_5 secured on the said shaft F_4 , and engaging the said toothed segments F_2 , the pulleys F_3 fastened on the said shaft F_4 , and endless belt F_2 passing over the said pulleys F_3 and F_1 , substantially as shown and described. 2nd. In an extension ladder, the frame E, the shaft F supported by the said frame E, means for revolving the said shaft F, the pulleys F_1 mounted on the said shaft F, the ratchet wheels K_5 attached to the outer ends of the said shaft and engaging the pawls K_1 , and the toothed segments F_2 supported on the said frame E, in combination with the ladder G fulcrumed on the said shaft F, the shaft F_4 mounted on the said ladder G, the pinions F_5 secured on the said shaft F_4 , and engaging the said toothed segments F_2 , the pulleys F_3 attached to the said shaft F_4 , and the endless belts F_2 passing over the said pulleys F_3 and F_1 , substantially as shown and described. 3rd. In an extension ladder, the frame E, and the windlass J having a partition and mounted on the said frame E, the shaft F, means for revolving said shaft, the pulleys F_1 on said shaft, and the toothed segment F_2 , in combination with the ladder G fulcrumed on a shaft on the said frame E, the shaft F_4 on said ladder, the pinion F_5 on the shaft F_4 , the pulleys F_3 on the shaft F_4 , endless belt F_2 encompassing said pulleys F_3 and F_1 , the ladder H telescoping in the said ladder G, the ropes H_2 fastened on the lower end of the said ladder H, and passing over pulleys on the ladder G to the said windlass J, the ladder I telescoping in the ladder H, and the ropes I_2 fastened by one end to the lower end of said ladder I, and passing over pulleys on the ladder H, and then fastened at its other end to the ladder G, substantially as shown and described. 4th. In an extension ladder, the trucks B and C, and the truck frame D supported on the said trucks B and C, in combination with the ladder frame E swinging or the king bolt B₁ of the truck B, the extension ladder held on the said frame E, the T-arm E₁ hinged on the outer end of the said frame E and supporting the same, and means for locking the said hinged arm E₁ in a vertical or horizontal position on the said frame E, substantially as shown and described. 5th. In an extension ladder, the combination, with the ladder frame E supporting the extension ladder and swinging on the truck frame D, of the T-arm E₁ hinged on the said frame E, the wheel or caster E₂ on the lower end of the said arm E₁, and the spring-catch E₃ attached to the said T-arm E₁, and the shoulder arm E₄ fastened on the said frame E and adapted to engage the said spring-catch E₃ so as to hold the said T-arm E₁ in a vertical position, substantially as shown and described. 6th. In an extension ladder, the combination, with the trucks B and C, of the truck-frame D made in two parts D₁ and D₂ hinged together at D₃, and means for levelling the front part D₁ of the said truck-frame D carrying the frame E supporting the extension ladder, substantially as shown and described. 7th. In an extension ladder, the combination, with the trucks B and C, of the truck-frame D made in two parts D₁ and D₂ pivoted together at D₃, and the screw N₁ held on the part D₂ and engaging a nut secured on the part D₁, substantially as shown and described. 8th. In an extension ladder, the front truck B, the truck frame part D₁ mounted on the said truck B, and the swivelled nut N held on the said part D₁, in combination with the rear truck C, the truck-frame part D₂ supported on the said rear truck C, and pivoted to the part D₁ at D₃, and the screw N₂ swivelled on the said part D₂, and engaging the said nut N, substantially as shown and described. 9th. In an extension ladder, the ladder carriage A and the frame E supporting the extension ladder, in combination with the brake mechanism acting on the rear truck, of the said ladder carriage, a rope or rod connected with a lever operating the said brake mechanism, and having a loop on its front end, and a foot-lever R pivoted on the

said frame E, and provided with a hook engaging the said loop of the rope or chain, substantially as shown and described. 10th. In an extension ladder, the combination, with the brake mechanism, of a lever connected with the said brake mechanism, a rod or rope Q₅ connected with the said lever, a rod or link S₂ connected with the said rod or rope Q₅, and a screw S connected with the said link S₂ and serving to act on the rod or rope Q₅ when its foot-lever R is disengaged, substantially as shown and described. 12th. In an extension ladder, the truck B and C, the truck-frame D supported on the said trucks B and C, the frame E swivelled on the king-bolt B₁ of the truck B and supported by the said truck-frame D, and the ladder G supporting the ladders H and I, in combination with the ropes P and P₁ secured by one end to a cross-beam of the truck C, and running under the side beams of the truck-frame D after being crossed, the drum P₁ mounted on the front end of the said truck-frame D, and on which the said ropes P and P₁ are wound, and the steering shaft P₂, engaging the said drum P₁ and adapted to turn the same from the frame, substantially as shown and described. 13th. In an extension ladder, the steering-drum P₁ carrying the ropes P and P₁ acting on the rear truck C, and steering shaft P₂ engaging the said drum P₁, and having a projecting arm P₃, in combination with the locking arm P₄ engaging the said projecting arm P₃, so as to prevent the steering-shaft P₂ from being turned, and holding the rear-truck C in a straight position in relation to the truck-frame D, substantially as shown and described.

No. 29,528. Feed Water Regulator for Steam Boilers. (Régulateur de l'eau d'alimentation des chaudières à vapeur.)

George S. Horrick, Syracuse, N. Y., U. S., 23rd July, 1888; 5 years.

Claim.—1st. An automatic feed-water regulator for steam boilers, comprising a float-vessel having an intermediate steam chamber or passage in the head of the float vessel made integral therewith, and extending transversely across the vessel, provided with steam pipes connecting it to the boiler and steam pump, a steam pump for supplying the boiler with water, and a steam valve in the steam chamber or passage operated automatically by the float in the float-vessel, substantially as and for the purpose set forth. 2nd. In a feed-water regulator, a float-vessel provided with an isolated steam chamber or passage in the head of the vessel made integral therewith, and a valve within the float-vessel connected to a lever and operated by the float, substantially as and for the purpose set forth. 3rd. The float-vessel having connections 1, 2 to attach it to a boiler, and the steam chamber or passage g in the head of the vessel provided with the steam connections e, d , and the valve e within the float-vessel, and connected to the lever γ , substantially as and for the purpose set forth. 4th. The float-vessel top or head made with the integral steam passage g , depending lugs 5 to which the lever 7 is pivoted, and depending stop 10 for supporting lever 7 when at its lowest point of depression, in combination, with the valve within the float vessel, and the float F, substantially as and for the purpose set forth. 5th. The float-vessel or tank having extended chamber f , the lugs 5 and steam passage g made integral with the head, and the lever γ pivoted to the lugs 5 in the extension f , and connected to the float F, substantially as and for the purpose set forth.

No. 29,529. Galvanic Battery.

(Batterie galvanique.)

Thomas P. Whittier, East Saginaw, Mich., U. S., 23rd July, 1888; 5 years.

Claim.—An excitant for galvanic batteries, composed essentially of a solution of the residual salts from natural brine, substantially as described.

No. 29,530. Stopper for Bottles, etc.

(Bouchon pour bouteilles, etc.)

William H. Sinnatt, Manchester, Eng., 23rd July, 1888; 5 years.

Claim.—1st. The combination of the partially recessed head a in a stopper for bottles or other vessels, with the lever cam d taking into such recess, and in connection with the wire or other bridle, band, or loop attached to the bottle or vessel neck, for the purpose and in manner substantially as shown and described. 2nd. The combination of a projecting head a in a stopper for bottles or other vessels, with the forked lever cam d spanning over such head, and in connection with the wire or other bridle, band, or loop attached to the bottle or vessel neck, for the purpose and in manner substantially as shown and described.

No. 29,531. Combined Coat and Hat Rack.

(Porte-manteau.)

Robert X. McArthur, Minneapolis, Minn., U. S., 23rd July, 1888; 5 years.

Claim.—1st. A combined coat and hat rack consisting of the back A provided with the coat-hooks B of any suitable construction fastened to the back, the hat-rack C hinged to the back, and supported substantially as set forth. 2nd. The hooks B formed of doubled wires having their ends fastened to the back, and having the portions b bent downward and secured in place by the staples c , substantially as and for the purposes described.

No. 29,532. Belting. (Courroie sans fin.)

James B. Forsyth, Boston, U. S., 23rd July, 1888; 5 years.

Claim.—The improved belting above described in which there are two or more strips a, a , each coated with rubber, or its equivalent, and folded into a distinct belt with a vulcanized coating, these distinct belts being united and vulcanized together and forming a multiply belt, substantially as described.

No. 29,533. Iron Building Construction.*(Construction de bâtisse en fer.)*

Leroy S. Buffington, Minneapolis, Minn., U.S., 23rd July, 1888; 5 years.

Claim.—1st. A building having a continuous skeleton of metal, a covering or veneer, and a non-conducting packing between the skeleton and veneer, for the purpose set forth. 2nd. In a building frame, a continuous diminishing laminated post formed of layers of metal plates, secured together and arranged to break joints and decreasing in number towards the top. 3rd. In an iron building construction, the combination, with a framing composed of continuous laminated posts suitably connected by braces, and girts of tie-beams secured thereto and to one another, substantially as set forth. 4th. In iron building construction, the combination, with a framing composed of continuous laminated framing posts, suitably connected by braces, of an exterior covering of non-conducting material, for the purpose set forth. 5th. In iron building construction, the combination, with a framing composed of laminated posts suitably connected by braces and girts, of an exterior covering of non-conducting material, and a stone or other veneer incrust thereto, and supported on shelves secured to the framing, substantially as set forth. 6th. In a frame for a building of two or more stories, a series of tapering posts extending from base to top of the frame, and formed of metal plates in layers, secured with their flat sides together, and arranged to break joint, and braces and girts, for connecting and securing the posts, substantially as set forth. 7th. In a building frame, a series of metal plates forming posts composed of metal plates secured with their flat sides together and breaking joints, in combination with girts and tie-beams secured thereto at each floor, substantially as set forth. 8th. The combination, with the laminated plates, of the continuous girts secured thereto, and the beams also secured thereto, and in one another, substantially as set forth. 9th. The combination, with the framing posts and braces, of the wire-lath, or other suitable coverings, the non-conducting packing and the veneering supported by the shelves, and anchor rods, substantially as and for the purpose set forth. 10th. The combination, with the building frame composed of the laminated posts, girts, and pillars arranged, of a central well, of the elevator shafts, and stairs arranged therein, substantially as set forth. 11th. The combination, with the building frame constructed with a central well, of elevator shafts arranged in the corners of such well, and flights of stairs rising from opposite sides of such well to a central landing, and of a shaft rising from said landing to the other sides of such well, substantially as set forth. 12th. The combination, with the posts and girts forming the outer frame, of the beams having their outer ends resting on the girts and secured to the posts, and their inner ends secured to beams that are transverse to them, the pillars therefore, and the diagonal tie-rods, substantially as set forth. 13th. The combination, with the posts and girts, of the angle-plates connecting them, and forming supports for the veneer shelves. 14th. The combination, with the posts and their braces, of the plates forming the shelf supports, the shelves, the veneer and the anchor rods, substantially as set forth.

No. 29,534. Motive Power Machine.*(Mécanisme de pouvoir moteur.)*

Jacques J. Couchennann, Paris, France, 23rd July, 1888; 5 years.

Claim.—1st. A cup wheel driven by balls dropped into the cups by a shoot above the wheel, the passage of the balls to the wheel being regulated by the regulator *r*, and the diagonal tie-rods, substantially as set forth. 2nd. In a cup wheel, the combination, with the wheel *e* having a rocker *g* at its end, of an endless chain *h*, the balls discharged from the wheel to the inclined tubes *t*, which latter are in connection with the endless chain wheels *o*, *u*, whose continuous rotary motion is imparted to them through the movement of the wheel by means of the chain wheels *p*, *m*, and endless chain *l*, the shafts in the manner, by the means, and for the purposes herein set forth.

No. 29,535. Fire Extinguisher.*(Extincteur d'incendie.)*

George R. Davis, Amherst, N.S., and James A. Steeves, Cornwall, N.B., 24th July, 1888; 5 years.

Claim.—The arrangement of the tube C into the receptacle A, the powder, or other explosive material, being placed in the bulb or bowl *b* at the end of the tubing C, and the fuse *l* leading thereto, with the cork F at the mouth of receptacle A.

No. 29,536. Farm Gate. (Barrière)

Isaac S. Sherwin and Frederick M. Tuckett, Toronto, Ont., 24th July, 1888; 5 years.

Claim.—1st. In a farm gate, the combination, with the posts and levers for opening and closing the gate from either side, of an oscillating bar pivoted to the hinge post, a curved segmental gear carried by each bar, a sliding gear mounted on such hinge-post, and an arm affixed to the gate and engaging with such slotted gear, in such manner that by the operation of the levers the gate will be raised and unlatched at its front end and swung back in either direction, substantially as specified. 2nd. In a gate apparatus, the combination, with a segmental gear and levers for operating same, of a horizontal shaft having a slot for receiving a pin, and an arm affixed to the gate and having two pins or projections entering such slot, and adapted to be drawn into pairs of such recesses alternately, and thus afford a leverage for tilting and swinging the gate, substantially as described. 3rd. In a gate apparatus, the combination, with the hinge-post, of a curved gear and levers for operating same, having vertical ribs and an arm affixed to the gate and engaging with such slotted gear, for the purpose described. 4th. The combination, with the ring O, of the perforated flange *p*, and an arm working thereon, for the purpose described. 5th. The combination, with the flanged ring O, of the arm *n* having curved end *m*, and corrugations *u*, for the purpose described. 6th. In a gate apparatus, the combination, with the gate, and means substantially such as described, for tilting same at its front end, of the locking posts *M* having latches *m*, for the purpose

specified. 7th. The combination, with the gate and its posts, and with the posts D and F and their connections, of the pivoted bar G, rods H, I, J, K, and operating levers K, K', substantially as and for the purpose described.

No. 29,537. Method of and Apparatus for the Electrical Transmission of Power. (Moyen et appareil de transmission électrique du mouvement.)

The Tesla Electric Company, (assignee of Nikola Tesla), New York, N. Y., U. S., 24th July, 1888; 15 years.

Claim.—1st. The method herein described of electrically transmitting power, which consists in producing a continuous progressive movement of the polarities of either or both elements (the armature or field magnet or magnets) of a motor by developing alternating currents in independent circuits including the magnetizing coils of either or both elements, as herein set forth. 2nd. The combination, with a motor containing separate or independent circuits on the armature or field, of an alternating current generator containing induced circuits connected independently to corresponding circuits in the motor, whereby a rotation of the generator produces a progressive shifting of the poles of the motor, as herein described. 3rd. In a system for the electrical transmission of power, the combination, of a motor provided with two or more independent magnetizing coils corresponding to the motor coils, and circuits connecting directly the motor and generator coils, in such order that the currents developed by the generator will be passed through the corresponding motor coils, and thereby produce a progressive shifting of the poles of the motor, as herein set forth. 4th. The combination, with a motor having an annular or ring-shaped field, and cylindrical or equivalent armature, and independent coils on the field or armature or both, of an alternating current generator having correspondingly independent coils, and circuits including the generator coils, and corresponding motor coils in such manner that the rotation of the generator causes a progressive shifting of the poles of the motor, in the manner set forth. 5th. In a system for the electrical transmission of power, the combination of the following instrumentalities, to wit: a motor composed of a disk or its equivalent mounted within a ring or annular field which is provided with magnetizing coils connected in diametrically opposite groups to independent terminals of a generator having induced coils or groups of coils equal in number to the pairs or groups of motor coils, and circuits connecting the terminals of said coils to the terminals of the motor respectively, and in such order that the rotation of the generator and the consequent production of terminal currents in the motor causes a progressive movement of the polarities of the motor, as hereinbefore described. 6th. The method herein described of operating electro-magnetic motors, which consists in producing a progressive shifting of the poles of its armature, by an alternating current and energizing its field magnets by a continuous current, as set forth. 7th. The combination, with a motor containing induced or independent circuits and closed induced circuits, of an alternating current generator having induced or generating circuits corresponding to and connected with the energizing circuits of the motor, as set forth. 8th. An electromagnet motor having its field magnets wound with independent coils and its armature with independent closed coils, in combination with a source of alternating currents connected to the field coils, and capable of progressively shifting the poles of the field magnet, as set forth.

No. 29,538. Vehiele Spring. (Resort de voiture.)

George E. Harris, Lawrenceville, Penn., U. S. and Harford, Ashley, Belleville, Ont., 24th July, 1888; 5 years.

Claim.—The within described torsion spring E having the end *e* secured to the end spring B, and the other extremity *e'* secured to the outer sill of the vehicle body, and the U-bond *U* in close proximity to the extremity *e'*, the said U-bond passing through the staple *p* and box F and its recurved turns lying flatwise in relation to the vehicle body, substantially as and for the purpose set forth.

No. 29,539. Automatic Grain Weigher.*(Balancé à grain automatique.)*

John Henry and John G. Neilson, Ardoch, Dak., U. S., 24th July, 1888; 5 years.

Claim.—1st. In a grain weigher, a forked scale beam receiver pivotally suspended between the arms thereof, and provided with a counterweighted hinged valve C closing the discharge aperture of the receiver, the trip lever D pivotally mounted upon the receiver, provided with a catch *n* on one end, in position to retain the valve C when closed, and counterweighted opposite end *t* for closing said catch, stop *i* mounted upon the framework in position to engage with end *k* of lever D to release said catch in combination with a self-closing cut-off on the supply stop, and the arm *h* on the valve connected by cord *o* with eye *p* on said cut-off to open said cut-off when the valve closes, and allow the cut-off to close when the valve opens, substantially as and for the purpose herein specified. 2nd. In a grain weigher, a hopper-shaped receiver pivotally mounted between the arms of a forked scale beam, and having one section of its angular bottom hinged at its upper edge, so as to swing outwardly to form a discharge aperture for the receiver and a valve for closing the same, and having projecting flanges on the side edges of the valve in combination to embrace the edges of the vertical sides of the receiver within the flanges, and means for automatically closing and retaining the valve after each discharge, substantially as and for the purpose herein specified. 3rd. The combination of the forked scale beam, hopper-shaped receiver, and valve supported between the arms of the beam, and having one section of its angular bottom hinged at its upper edge, so as to swing outwardly, a lip or shelf E having arms extending upwardly on each side of the receiver, and pivoted thereto the edge of the lip or shelf projecting outwardly beyond the sloping fixed bottom of the receiver opposite the valve, and means for automatically closing the valve and rotating the same after each discharge, substantially as and for the purpose herein specified.

No. 29,540. Electro-Magnetic Generator.*(Générateur électro-magnétique.)*

Wobster Gillett and George Hasetino, New York N. Y., U. S., 24th July, 1888; 5 years.

Claim.—1st. In a magneto-electric generator, an armature of ring form provided with segmental projections J, substantially as herein set forth. 2nd. In a magneto-electric generator, a permanent magnet with coils of wire wound upon its extremities, in combination with an armature made in ring form and provided with segmental projections, substantially as herein set forth. 3rd. In a magneto-electric generator, the combination of an armature A provided with segmental projections J, cross bar B, permanent magnet C, with coils of wire D constructed to revolve the insulated wire G and spring H, substantially as herein set forth.

No. 29,541. Car-Coupler. *(Attelage de chars.)*

The Blocher Car-Coupler Company, of Illinois, assignee of John C. Blocher, Lima, Ohio, U. S., 24th July, 1888; 5 years.

Claim.—1st. In a car coupling, the combined draw head and tumbling latch provided with arms extending through and swinging in said draw head, the two parts cast together and constituting a single article of manufacture, substantially as described. 2nd. In the car coupling, the draw-head, the tumbling latch provided with arms extending through said draw head and which the latch swings, the handles to operate said latch from outside the draw head, and the hook end to engage with the link, in combination with an open link and coupling pin, substantially as described.

No. 29,542. Catamenial Band.*(Bande cataméniale.)*

Aurie V. Robinson, Fort Ann, and Eugène Pearl, New York, N. Y., U. S., 24th July, 1888; 5 years.

Claim.—The supporting band for catamenial or absorptive cloths or pads, composed of the two segmental sections A, A, having re-enforced ends C supplied with eyelets D, in combination with elastic lacing E passing through the eyelets, and adjustably and flexibly uniting the two sections of the band together, and with elastic loops L depending from each section, in manner as described for the purposes specified.

No. 29,543. Apparatus for Applying the Expansive Power of Heat. *(Appareil pour appliquer la force expansive de la chaleur.)*

Frank G. Bigelow, Trustee, assignee of William C. Shaffer, Milwaukee, Wis., U. S., 24th July, 1888; 5 years.

Claim.—1st. The chamber A, provided with the piston B, and filled behind said piston with a material which is solid and fixed under ordinary temperatures, but which softens and expands under heat and drives said piston forward, substantially as herein shown and for the purposes set forth. 2nd. The chamber A, provided with the piston B and filled behind said piston with paraffine, whereby the piston is driven forward when said chamber is heated, but does not move in response to other agencies so long as said chamber is not subjected to abnormal heat, substantially as shown and described. 3rd. The combination of a piston B and chamber A filled with a fusible solid, said chamber being broadened below or behind the piston in order that it may expose a relatively greater surface to the heat, substantially as herein described. 4th. The combination of a piston B and chamber A filled with paraffine, said chamber being broadened below or behind the piston in order that it may expose a relatively greater surface to the heat, substantially as herein described. 5th. The combination, with the piston B and chamber A filled with a fusible solid, of a spring or weight to return the piston to its normal position after it has been driven forward, substantially as shown and described. 6th. The combination, with the piston B and chamber A filled with a fusible solid, of a spring I and yoke K connecting said yoke and piston, substantially as shown and for the purposes specified. 7th. The method of applying the expansive power of heat, which method consists in confining an easily conformable substance by fixed walls and a movable solid part, and then imparting heat to said easily conformable substance, whereby it expands and moves said movable part, substantially as shown and described. 8th. The method of applying the expansive power of heat, which method consists in confining a fusible solid by fixed walls and a movable solid part, and then imparting heat to said fusible solid, whereby it expands and moves said movable part, substantially as shown and described.

No. 29,544. Manufacture of Hosiery.*(Fabrication de la bonneterie.)*

Margaret Everall, assignee of George Everall, Beeton, Ont., 24th July, 1888; 5 years.

Claim.—1st. The within-described process consisting in passing the surface of knitted hose, gloves, or similar knitted articles over the surface of carding-cloth, substantially as and for the purpose specified. 2nd. Knitted hosiery, gloves, and similar articles having a nap formed on their surface or surfaces, substantially as and for the purpose specified.

No. 29,545. Metallic Packing for Vibrating Engines. *(Garniture métallique pour machines tremblantes.)*

William E. Crist and Thomas Hawkins, Brooklyn, assignees of Peter M. Holmgren, New York, N. Y., U. S., 24th July, 1888; 5 years.

Claim.—1st. The combination in a packing for vibrating pistons of diamond end-strips fitted in a longitudinal recess in each end of the piston, lateral strips fitted in longitudinal recesses in the side edges of the piston, and jointed and pivoted to the end-strips at the corners of

the piston, packing-rings seated in the piston to encircle its trunnions, and embraced within recesses at the inner ends of the inner sides of the lateral packing-strips, plates made fast to the side strips to cover the inner face of each packing-ring, a plate fast to the inner face of one division of each end-strip to cover its joint with the proximate division, and a series of springs interposed between the several packing strips and the piston, substantially in the manner and for the purpose herein set forth. 2nd. The combination in a packing for vibrating pistons having self-adjusting end-strips, substantially as described, of lateral strips fitted each in a longitudinal recess in the side-edge of the piston, packing-rings seated in the piston to encircle its trunnions, and which are severally embraced within recesses at the inner ends of the inner sides of the lateral packing strips, and spring devices substantially as described for forcing the rings and strips outwardly against the wall of the piston-chamber, substantially in the manner and for the purpose herein set forth.

No. 29,546. Apparatus for the Automatic Changing of Circulating Library Books. *(Appareil d'échange automatique des livres des bibliothèques publiques.)*

Julius Mehlhardt and Anton Braune, Dresden, Germany, 24th July, 1888; 5 years.

Claim.—1st. The pivoted double armed lever D₁, which is turned by the weight of the coin introduced, in such a manner that it releases the book B; it is desired to obtain. 2nd. The pivoted double armed levers D₁, D₂ connected by a cord or chain K, the lever D₂ being turned by the weight of the book B, introduced and freeing the book B from the lever D₁ (fig. 1.) 3rd. The levers α and γ connected by the cord or chain Z, which force the book B to fall flat onto the drawer S, so that it may be withdrawn with this. 4th. The lever H₂ pivoted in A₂, which when released by the lever I and when the book B has fallen down and book B stands in its place, holds the latter in position when book B is withdrawn with the drawer S, the whole constructed and operating substantially as described and illustrated in the accompanying drawings.

No. 29,547. Vehicle Wheel. *(Roue de voiture.)*

The Batavia Wheel Company, assignee of Moses E. True, Batavia, N. Y., U. S., 24th July, 1888; 5 years.

Claim.—In a vehicle wheel hub A, the metallic bar B and spoke C, all formed and combined as and for the purpose hereinbefore set forth.

No. 29,548. Apparatus for Reducing Bituminous Rock, etc. *(Appareil pour réduire le rock bitumineux, etc.)*

George E. Bolwar, San Francisco, Cal., U. S., 24th July, 1888; 5 years.

Claim.—1st. An apparatus for reducing and preparing bituminous rock and other like substances, consisting of a steam-tight tank A, with an inlet in the top, and a draw off opening in the side at the bottom, which are fitted with steam tight covers, and having its interior divided by a grate-surface into an upper melting or reducing space, and a lower receiving and heating space and having a steam coil in each space and connection of the same outside the tank with a steam-supply, as hereinbefore described. 2nd. An apparatus for reducing and preparing bituminous rock and other like substances, consisting of a steam-tight tank A having a grate surface composed of grate-bars B to which a rocking or oscillating motion is imparted, and having in the spaces above and below said grate surfaces a steam coil and connection thereof with a steam-supply outside, as hereinbefore described. 3rd. The rocking-grate surface consisting of the separate suspended grate bars B, the rocking-bars K, R, slotted blocks P, P, and the crank-shaft and connecting rods having connection with said rocking-bars by crank arms, for operation as set forth. 4th. The combination and arrangement of the whole apparatus, as hereinbefore described and represented by the drawing.

No. 29,549. Removable Box Cover and Show Case. *(Couvercle de boîte et montre mobiles.)*

Donald McLehlan, Woodstock, Ont., 24th July, 1888; 5 years.

Claim.—The combination of the metallic frame A, B, C, D, with the rim L, M, N, and the hinged glass cover A, E, F, B, substantially as and for the purpose hereinbefore specified.

No. 29,550. Galvanic Battery and Apparatus Connected therewith. *(Pile galvanique et appareil qui s'y rattache.)*

Alfred R. Upward and Charles W. Pridham, London, Eng., 24th July, 1888; 5 years.

Claim.—1st. A gas battery in which chlorine gas circulates through the coils, and as gas surrounds the carbon elements of the battery. 2nd. A battery cell in which a zinc element is immersed in a solution of chloride of zinc, separated by a porous diaphragm from a carbon element around which chlorine gas circulates, whereby the chloride of zinc around the zinc element operating electrolytically local action is avoided, whilst at the same time the full electro motive force due to zinc burning in free chlorine is obtained. 3rd. A battery cell consisting of the parts a, b, c, f, g, substantially as described. 4th. Our improvements in galvanic batteries in which chlorine gas is employed, consisting in combining with the battery cells a gas receiver consisting of a column or columns, substantially as described. 5th. The combination, with the cells of a gas battery, of a columnar or displacement gas receiver and an aspirator or like apparatus, substantially as described. 6th. The combination with the cells of a gas battery of a columnar or displacement gas receiver, an aspirator or like apparatus, and an electric governor controlling the action of the said apparatus,

substantially as described. 7th. The combination, with the coils of a gas battery, of a gas receiver supplying chlorine gas to the coils by gravitation, and the suction resulting from the absorption of gas within the cell, substantially as described. 8th. The combination, with a gas battery, of a generator having parts *a*, *a'*, *a*², *b*, *c*, *c'*, *d* and *e*, substantially as described.

No. 29,551. Bag Weighing Scale.

(*Balance pour les sacs.*)

Edward R. Abercrombie, Ephrasia, and George Marshall, St. Vincent, Ont. 24th July, 1888; 5 years.

Claim.—The combination of the hopper *A* and the guides *B*, *B* and springs *C*, *C*, with the suspended frame *D*, substantially as and for the purpose hereinbefore set forth.

No. 29,552. Folding Hat and Coat Rack.

(*Porte-manteau brisé.*)

Rayner D. Tolman, Shawano, Wis., U.S., 24th July, 1888; 5 years.

Claim.—1st. A folding coat and hat frame, consisting of a shelf formed of wire upon which hats may be placed, side frames hinged thereto with loops to attach them to nails or other supports, and hooks pivoted to the rear and sides of the shelf, the several parts being constructed of wire and adapted to be folded up together, substantially as described. 2nd. A combined hat and coat rack, consisting of a shelf forming a support for hats, and having folding double hooks pivoted to its sides and rear, and folding side frames with extended brace hook arms, and looped ends adapted to be attached to nails or other retaining devices, the several parts being formed of wire and adapted to be folded up together, substantially as described. 3rd. The combination, with a shelf for supporting hats formed of a single piece of wire, and having a rear wire brace with vertical projection, of double hooks formed of a single piece of wire pivoted to the rear of said shelf, and having an extended portion adapted to bear against the vertical projection at the rear of the shelf, double hooks formed of a single piece of wire pivoted to the shelf and having braced hook arms and suspending loops, the several parts folding together, substantially as described. 4th. In a hat and coat frame, a shelf made of a single piece of wire having double folding hooks, each pair of hooks being formed of a single piece of wire, substantially as described. 5th. In a combined hat and coat supporting frame, a shelf formed of a single piece of wire having folding suspending side frames, and folding suspending hooks formed of wire bent upon itself to form said hooks, substantially as described. 6th. A folding hat and coat frame consisting of the shelf *I* having folding side frames *L*, with loops *M* and brace arms *N* with hooks *O*, folding double hooks *J* and *K*, the frame *I* having brace wire *G* with vertical projection *H*, and the hooks *J* having extended portion *P* adapted to bear against said vertical projection *H*, substantially as described.

No. 29,553. Feed Water Regulator for Steam Boilers. (*Régulateur d'eau des chaudières à vapeur.*)

George S. Herriek, Syracuse, N. Y., U. S., 24th July, 1888; 5 years.

Claim.—1st. In a feed-water regulator, the combination of a float-vessel having an isolated steam passage in its head or top, provided with a pipe connected to the steam-pump, and a valve-chamber seated above the steam-passage in the float-vessel, having steam-inlets connected respectively to the steam-supply pipe and steam-passage by a valve connected to the float in the float-vessel, substantially as and for the purpose set forth. 2nd. In a feed-water regulator, the combination of the valve *a* and float *B*, connected by the stem *A*, and located respectively in the valve-chamber *C* and float-vessel *A*, the valve-chamber and float-vessel being provided with steam-passages above and below the valve and above and below the float, the steam-passage above the valve being isolated from those below it and connected to the steam-pump, whereby the valve and float are in equilibrium under steam pressure, substantially as and for the purpose specified. 3rd. The combination of the head *H* having the steam-passage *p* integral therewith, with the valve-chamber *C* seated above the passage *p* in the head *H*, and having steam-inlets connected to the passage *p*, substantially as and for the purpose set forth. 4th. The combination of the valve-chamber *C*, head *H* having the isolated steam-passage *p*, and sleeve *R* having steam-inlets *e*, substantially as and for the purpose set forth.

No. 29,554. Horse Detacher.

(*Appareil de dételage instantané.*)

George T. Parker, Glasgow, Ky., U. S., 24th July, 1888; 5 years.

Claim.—1st. The combination, with the ferrule having the trace-stud, of the double-armed stud, whereby to force the trace off such stud, the retracting-spring operating between the arms of the slide and a tripper, substantially as set forth. 2nd. The ferrule having a trace stud, the slide whereby to force the trace off the stud, and the tripper having a crank-like arm arranged to engage the rear end of said slide, substantially as set forth. 3rd. In a horse detacher the combination, with the trace securing stud, of the double-armed slide, having arms movable along said stud on opposite sides thereof, substantially as set forth. 4th. The improved horse-detacher herein described consisting of the slide, the tripper and the ferrule, constructed to receive such slide and tripper, substantially as described, whereby such parts may be cast ready for use, and be operatively connected without the intervention of connecting-rivets and the like, substantially as set forth. 5th. A horse-detacher comprising a ferrule provided with a trace-securing stud, and with a socket having its walls grooved, the slide and tripper and lateral teats to enter the grooves of the socket-walls, substantially as set forth. 6th. The ferrule having a socket, the walls of which are provided with grooves *F*, *F*, connected by grooves *f*, the slide and the tripper having lateral teats to enter the grooves of the socket-walls, substantially as set forth. 7th. The ferrule having a socket and formed with a bridge *a* and ways *G*, *G*, combined with the slide having its arms movable through such

ways, and having their rear ends connected by a cross-bar, the spring fitted in said slide and operating between its rear cross-bar and the bridge *a* and the tripper substantially as set forth. 8th. The combination of the ferrule having stud *E*, socket *A* and mortise *a*, the slide and the trip arranged to engage said slide, and provided with extensions *c* to fit in mortise *a*, substantially as set forth. 9th. The combination of the ferrule having socket *A*, cross-bridge *a* and ways *G*, *G*, the double-armed slide operating in said ways and the tripper, substantially as set forth. 10th. The improved horse-detacher herein described, consisting of the ferrule having socket *A*, cross-bridge *a*, grooves *F*, *f*, *F* and mortise *a*, the double-armed slide having lateral teats to enter the grooves of the ferrule, and the tripper having a crank-arm at its rear end, teats to enter the groove *F* of the ferrule, and provided at its outer ends with a trace-retaining hook, substantially as set forth.

No. 29,555. Game. (*Jeu*)

William C. Dunn, New York, N. Y., U. S., 24th July, 1888; 5 years.

Claim.—1st. The combination of discs revoluble about their centres, a radical slot in each side and a border on the outer edge of each disc divided into equal spaces, and each space containing a symbol with a sheet of suitable material having a plane surface to which said revoluble discs are attached, series of numbers inscribed in circles upon said plane surface, so that when said discs are turned said numbers may be successively seen through said slots, index hands east upon said plane surface one for each disc with an arc of the prometer of said disc and pointing to the centre thereof, two leaves of equal size having plane surfaces and flexibly attached by one edge each to an opposite side of said plane surfaces sheet, so as to fold thereon a series of equal spaces marked upon the inner side of each leaf, a pair of symbols and a question east upon each of said spaces upon one leaf, and a series of numbers and answers east upon the other leaf, and the said pairs of symbols so arranged with regard to the symbols on the said revoluble discs, that when the corresponding symbols upon two of said discs are set opposite the said index hands a number corresponding to each disc may be seen through the slot thereof, which numbers constitute an arithmetical problem the solution of which gives the number of the answer to the question east upon the said pair of symbols upon one of said leaves, which number and answer is east upon the other leaf, substantially as and for the purpose set forth. 2nd. The combination of the discs *1*, *2*, *3* and *4*, the slots *a* of said discs and the border *b* thereof divided and marked with symbols, as specified, with the plane surfaced sheet *B* to which the discs *1*, *2*, *3*, *4* are revolubly attached by their centres *c*, *c*, *c*, *c*, the circles of numbers *E*, *E*, *E*, *E* inscribed as aforesaid upon said sheet *B*, the index hands *D*, *D*, *D*, *D* also east upon the sheet, the leaves *A* and *C* flexibly attached to said sheet *B*, and each divided into spaces and east upon as specified, all substantially as and for the purpose set forth.

No. 29,556. Cloth Rack. (*Porte-manteau.*)

John Danner, Canton, Ohio, U. S., 24th July, 1888; 5 years.

Claim.—1st. As a new article of manufacture, a clothes rack consisting essentially of the bar *A* having a downwardly projected flange *R* and perforations *H*, bar *B* having transverse grooves *E* and perforations *F*, hook supports *D* having hooks *L*, *P*, *O*, and end pieces *C* for securing the bars *A* and *B* to each other at the proper distance apart, when combined and arranged substantially as shown and described and for the purpose set forth. 2nd. The combination in a clothes rack of the bars *A* and *B*, the said bar *B* having cross-grooves *E* and perforations *F*, hook supports *D* having end pivots *G* and *J*, and hooks *L*, *P*, *O*, substantially as described and for the purpose set forth. 3rd. The combination in a clothes rack, of bars *A* and *B*, hook supports *D* pivotally secured thereto, and end pieces *C* having outwardly projecting sockets *M* to embrace and cover the ends of the said bars, substantially as shown and described and for the purpose set forth.

No. 29,557. Manufacture of Salts of Quinine. (*Fabrication des sels de quinine*)

Loretta B. Weld, Falmouth, Mass., U. S., 25th July, 1888; 5 years.

Claim.—1st. The within described improvements in the manufacture of the hydrochlorate of quinine, consisting in dissolving the sulphate of quinine in boiling alcohol with chloride or sodium, precipitating the sulphate of soda and any excess of chloride of sodium, and then evaporating the alcohol forming the hydrochlorate of quinine as crystals, substantially as described. 2nd. In the manufacture of hydrochlorate of quinine, dissolving sulphate of quinine and chloride of sodium in boiling alcohol, concentrating the solution until sulphate of soda is precipitated, then separating the precipitate and evaporating to deposit the hydrochlorate of quinine in a crystallized form, substantially as described.

No. 29,558. Composition for Roofing and Carpet Felt, Straw Lining, etc.

(*Composition pour toiture, bourre de tapis, doublure de paille, etc.*)

Thomas P. Bishop, Jr., St. Bazile, Que., 25th July, 1888; 5 years.

Claim.—In the manufacture of carpet felt, roofing felt, and straw lining, the admixture with the ingredients of which these are now composed, of spent tan bark within the proportions of from fifteen to twenty per cent, as and for the purpose set forth.

No. 29,559. Medical Compound or Mixture for the Cure of Dyspepsia, Indigestion, Neuralgia, etc. (*Composition médicale pour la guérison de la dyspepsie, l'indigestion, la névralgie, etc.*)

John M. McLeod, Goderich, Ont., 25th July, 1888; 5 years.

Claim.—In a medical mixture or compound, the combination of onions, lemons, iron, ammonia, quinine, sulphuric acid, acetate of pargoric, extract of buchu, belladonna and benzoin, all as and for the purposes set forth.

No. 29,560. Hydro-Carbon Safety Lamp.

(Lampe de sûreté à hydrocarbures.)

William F. B. M. Mainwaring, London, Eng., 25th July, 1888; 5 years.

Claim.—1st. In hydro-carbon safety lamps, the employment of extinguishing apparatus consisting of extinguishing jaws or levers A, B, arms b, connected links d, d', operating rod or link e, falling operating weight f, connecting cord or chain F, and support g on which the weight normally rests, substantially as herein shown and described and for the purpose stated. 2nd. In combination with the extinguishing mechanism of hydro-carbon safety lamps, the employment of falling operating weight or weights f, which in their normal position rest on supports g, substantially as herein shown and described and for the purpose stated.

No. 29,561. Machine and Apparatus for the Manufacture of Wood Pulp and Articles therefrom. (Machine et appareil de fabrication de la pâte à papier et des objets en pâte à papier de bois)

Goldsbury H. Pond, Montreal, Que., 25th July, 1888; 5 years.

Claim.—1st. In an apparatus for the manufacture of wood pulp, or other fibrous or plastic material or articles made therefrom, a series of adjustable metallic strips arranged side and side together composing the bottom, top or sides of a press or mould, said strips having in their distal ends between them, substantially as herein set forth and described. 2nd. In an apparatus for the manufacture of wood pulp, or other fibrous or plastic material, or articles made therefrom, the combination of a series of adjustable metallic strips arranged side and side together, composing the bottom, top, and sides of a press or mould, having thin spaces between them with a piston, substantially as set forth and described. 3rd. In an apparatus for the manufacture of wood pulp or other fibrous or plastic material, or articles made therefrom, the combination of a series of adjustable metallic strips arranged side and side together, composing the bottom, top, or sides of a press or mould, with a piston and a beveled ring, substantially as set forth and described. 4th. In an apparatus for the manufacture of wood pulp or other fibrous or plastic material, or articles made therefrom, the combination of a series of metallic strips arranged side and side together, composing the bottom, top, or sides of a press or mould with a piston and a beveled ring and a ribbed bed (and a form of letters, figures or other articles) substantially as herein described and set forth.

No. 29,562. Burial Casket Making.

(Fabrication des cercueils.)

John W. Dearman, Maitland, N.S., 25th July, 1888; 5 years.

Claim.—1st. The combination in a burial casket of two sheets of metal, pressed or spun, of equal or different sizes, as shown and described for the purpose set forth. 2nd. In a pressed or spun sheet metal casket, the grooves and perforated flanges, as shown and described for the purpose set forth.

No. 29,563. Fire-Escape. (Sauveteur d'incendie.)

George H. Thompson, Reading, Penn., U.S., 25th July, 1888; 5 years.

Claim.—1st. A ladder composed of a series of boxes and a sliding step in each box, substantially as set forth. 2nd. A ladder composed of a series of boxes, having sliding steps adapted to be concealed within the box, substantially as set forth. 3rd. A ladder composed of a series of boxes, a step within each box, and mechanism for sliding said step, substantially as set forth. 4th. A ladder composed of a series of boxes, a step in each box, mechanism for sliding said step, and a stop in the box to limit the movement of the step, substantially as set forth. 5th. A ladder composed of a series of boxes, a step in each box, mechanism for sliding said step, a stop to limit its outward movement, and a bearing on the box to sustain the weight brought to bear upon the step, substantially as set forth. 6th. A ladder composed of a series of boxes, a step in each box, levers in the box, a stop for limiting the outward movement of the step, and mechanism for operating the levers to slide the step, substantially as set forth. 7th. In ladder composed of a series of boxes, a step in each box, a stop to limit the forward movement of the step, a sliding block mounted in grooves in the box and bearing at their free ends upon the step and levers fulcrumed in the bracket and bearing at their ends against the sliding block and the step, substantially as set forth. 8th. A ladder composed of a series of boxes, a step in each box, a stop to limit the forward movement of the step, a sliding block mounted in the box above the step, a bracket secured within the box, a pair of levers fulcrumed in the bracket and having their free lower ends bent at right angles to said brackets and adapted to bear against the step, and the upper ends of the levers bent at right angles to the bracket, and made to rest at a point above the bracket and bear at their free extremities against the sliding block, substantially as set forth. 9th. A ladder composed of a series of boxes having open faces and an inwardly projecting flange at each end of said open face, strips on the end plates of the box, a step in each box beneath said flanges and strips, a stop to limit the forward movement of the step, a sliding block having hollow boxes adapted to slide upon the step and levers fulcrumed in the box and bearing at their free ends upon the step and sliding block respectively, substantially as set forth. 10th. A ladder composed of a series of boxes, a step in each box, a stop to limit the forward movement of said step, a sliding block having hollow boxes fixed thereto, projecting pins secured to the sides of the operator C, and adapted to slide upon bearings above the step and levers fulcrumed in the box and bearing at their respective ends against the step and

sliding block, substantially as set forth. 11th. A ladder composed of a series of boxes, a step in each box, rack bars on each step, a sliding block above the step, a rack bar on said sliding block, and pinions journaled in the box to mesh with said rack bars, substantially as set forth. 12th. The combination, with a building, of a series of boxes secured in the wall thereof, and a sliding stop in each box, substantially as set forth. 13th. The combination, with a building, of a series of boxes secured in the wall thereof, with a sliding stop in each box, a sliding block mounted in the box above the stop, and levers fulcrumed in the box and bearing upon the sliding block and step respectively, substantially as set forth. 14th. The combination, with a building, of a series of boxes secured in the wall thereof, a sliding stop in each box, a sliding block mounted in the box above the stop, and mechanism for operating said stop, and block to conceal the working parts of the device, or adapt the same for use as desired, substantially as set forth. 15th. The combination, with a building, of a series of boxes secured in the wall thereof, a sliding stop in each box, a sliding block mounted in the box above the step, and bells in rooms of the building and connected with a working part of the boxes, substantially as set forth. 16th. The combination, with a building, of a series of boxes secured in the wall thereof, a sliding stop in each box, and a ladder secured to the wall of the building and projected over the corner of the top of the building, substantially as set forth. 17th. The combination, with a building, of a series of boxes secured in the top of the wall of the building, and projecting beyond the edge thereof, and a series of boxes having steps secured in the wall of the building, the upper box of the series being in close proximity to said bracket, substantially as set forth.

No. 29,564. Locomotive Fire-Box.

(Boîte à feu de locomotive.)

Charles W. Hullings, Burlington, N. J., U. S., 25th July, 1888; 5 years.

Claim.—1st. The combination, with the locomotive boiler and fire-box provided with a fuel opening, of the hollow baffler extending through the upper part of the fuel opening, and detachably connected at the lower end with the boiler, whereby it may be readily removed without detracting from the strength of the boiler, substantially as set forth. 2nd. In a locomotive engine, the combination, with the fire-box having a fuel opening B and the boiler of the arched hollow baffler extending through the upper end of the fuel opening into the boiler box, and detachably connected at its outer exposed end to the boiler by a valve C, and connected at its inner exposed end to the water supply pipes and the outer exposed end of said baffler, whereby the valves in said connections may be closed, and the baffler removed without interfering with or drawing the fire or emptying the tank arranged for the fuel opening B, the water supply injector and feed water pipes H, H', N, N', and P, and the valves pipes Q, Q' of the hollow baffler I extending through the fuel opening B, valved exterior attaching connections J, J' between the baffler and the boiler, valved pipes M, M' leading from pipes N, N' to the baffler, and valved pipes O, O' leading from pipes M, M' to feed pipe P, substantially as set forth. 3rd. The combination, with a locomotive boiler and fire-box provided with a fuel opening, of the hollow baffler plate extended through the fuel opening, and in communication with the feed pipes and with the boiler, the said feed pipes being provided with check valves between the injectors, or pumps, and the said baffler-plate, substantially as described.

No. 29,565. Automatic Electric Feed Controller. (Régulateur automatique de l'alimentation électrique.)

Gustavo S. Xou, New York, N.Y., U.S., 25th July, 1888; 5 years.

Claim.—1st. The combination, with a liquid receptacle and the feed-controlling device thereof, of operating mechanism and an electric circuit arranged to work the valve in one direction when the said circuit is closed, separate operating mechanism, and an electric circuit arranged to work the valve in the opposite direction when the circuit is closed, and high and low-level float circuit closer on the tank arranged for the respective circuits, substantially as described. 2nd. The combination, with a liquid receptacle and a valve, of an electric circuit arranged to work the valve in one direction when the said circuit is closed, separate operating mechanism, and an electric circuit arranged to work the valve in the opposite direction when the said circuit is closed, and a self-opening circuit closer in each of said circuits for the purpose to be described. 3rd. The combination, with a liquid receptacle and a valve, of a self-opening circuit closer which is produced through the agency of the other of said circuits, substantially as described. 3rd. The combination, with the arm or operator C₁ of a weight or its equivalent, to work the operator C₁ in one direction, a fluid-power motor arranged to work the operator C₁ in the opposite direction, a motor-controlling valve, self-engaging tripping device for the latter catch, circuit closers in the circuit of each, said electric tripping devices arranged to be opened automatically by the release of the operator C₁ and the motor respectively, and to be closed automatically by the return of the same, and a self-opening circuit closer in the circuit of the motor-valve tripping device adapted to be engaged by the return of the operator C₁, substantially as described. 5th. An improved double-acting motor-controlling circuit consisting of an insulated support, a low-level float having a vertically movable extension, a high-level float playing vertically on said extension but electrically connected therewith, and fixed contacts insulated from each other and adapted to be engaged by the respective floats, substantially as described. 6th. An improved electric locking

and releasing device consisting of a movable catch, a vibratory hammer, a vibratory armature, an electro-magnet and electric connections, combined and arranged substantially as described. 7th. An improved self-locking device for an operating arm consisting of a pivotal forked lever, a stop to retain the same in position to receive in its fork the operating arm, and the self-acting catch to engage the forked lever, substantially as described. 8th. The combination, with a self-acting supply valve and a catch for restraining the valve, of a vibratory hammer to trip the catch, an electro-magnetic vibrator to operate the hammer, and an electric circuit, substantially as described. 9th. The combination, with a weighted or spring actuated operating arm, of a pivotal lever having a fork to engage the arm, a catch for the forked lever, and a catch tripping device, substantially as described. 10th. The combination, with an operator C₁ of a fluid power motor arranged to work the operator C₁, a self-acting motor-controlling valve, a self-engaging catch to restrain the motor-valve, a catch tripping device and mechanism arranged to be operated by the action of the operator C₁ to return the motor valve to the restraint of its catch, substantially as described. 11th. The combination, with a main valve of a fluid power motor arranged to work the main valve, a self-acting motor-controlling valve, a catch to restrain the motor valve, and a catch tripping device, substantially as described. 12th. The combination, with a weighted or spring actuated operator C₁, of a fluid power motor to work the operator in opposition to its weight or spring, a motor controlling valve, catches to restrain the operator C₁ and the motor-valve, a tension device acted upon by the operator C₁ and acting on the motor-valve, and tripping devices for the respective catches, substantially as described. 13th. The combination, with a weighted or spring actuated operator C₁, of a fluid power motor to work the operator C₁ in opposition to its weight or spring, a self-acting motor-controlling valve, means for locking and releasing the motor valve, a movable stop connected with the motor valve, a tension device acting on the stop and acted upon by the operator C₁, and a catch to restrain the stop arranged to be tripped by the action of the operator C₁, substantially as described.

No. 29,566. Pipe Coupling for Railway Cars.

(*Joint de tuyau pour chars de chemins de fer.*)

Alphonse Côté, Galway, N. Y., U.S., 27th July, 1888; 5 years.

Claim.—1st. In a coupling, the combination of a socket, a thimble, a coupling-pipe in said thimble, and the spring secured to the thimble and pipe, substantially as described. 2nd. In a coupling, the combination of socket, a thimble, a coupling-pipe in said thimble, and a spring disk secured to the thimble and pipe, substantially as described. 3rd. In a coupling, the combination of a socket, a thimble having washers upon the outer side, a coupling-pipe within said thimble, and a spring secured to the thimble and coupling, substantially as described. 4th. In a coupling, the combination of a socket, a thimble, a screw headed coupling-pipe, and a spring attached to the thimble and secured to the coupling-pipe by clamping nuts, substantially as described. 5th. In a coupling, the combination of a socket, a thimble having rounded ends, a coupling-pipe secured to the thimble by a spring and saucer-shaped clamping nuts, substantially as described. 6th. In a coupling, the combination of a socket, a thimble having rounded ends, a coupling-pipe having a spring disk secured to the thimble, and saucer-shaped clamping nuts, substantially as described. 7th. In a coupling, the combination of a socket, a thimble having rounded ends on each end, a coupling-pipe connected with said thimble by a spring and saucer-shaped nuts upon said coupling-pipe, substantially as described. 8th. The combination in a pipe-coupling of a socket, a thimble formed of two sections screw-headed together and having rounded ends, a coupling pipe secured to the thimble by a spring, and the saucer-shaped nuts upon the coupling-pipe, substantially as described. 9th. The combination in a pipe-coupling, of a socket, a thimble having the screw-nuts upon the ends, and packing between the nuts, and a coupling-pipe fulcrumed upon and secured to said thimble by a spring, substantially as described. 10th. In a pipe-coupling, the combination of two sockets having their mouths opposite each other, a cap upon one of said sockets, a coupling-pipe passing through said cap into the sockets, and a sliding thimble within the socket and secured to said pipe by a flexible connection which permits the pipe to turn, substantially as described. 11th. In a pipe-coupling, the combination of two sockets pivoted at their rear ends, hangers for supporting the front ends of said sockets, a cap upon one of said sockets, a coupling-pipe passing through said cap into the sockets, and a sliding thimble within the socket and secured to said pipe by a flexible connection, which permits the pipe to turn, substantially as described. 12th. In a coupling, the combination of the socket pivoted at their rear ends, the swinging hangers having the stops and clips, and a pipe having spheroids on its ends adapted to turn and slide in said sockets, substantially as described.

No. 29,567. Improvement in Treating Metals.

(*Perfectionnement dans le traitement des métaux.*)

George W. Gosner, New York, N. Y., U. S., 27th July, 1888; 5 years.

Claim.—1st. The described method of treating metallic articles for changing their surfaces to an alloy or compound homogeneous with the body metal of a practically non-corrodible nature, consisting in applying to said articles within a suitable retort from which atmospheric air is excluded, first, superheated steam, second, commingled superheated steam and hydrocarbon to form the alloy or compound, and, finally, a fixing agent whereby the alloyed surface previously formed is fixed, substantially as described. 2nd. The described method of treating metallic articles to change the surface to an alloy or compound homogeneous with the body of the metal, consisting in the treatment of said articles in a retort from which atmospheric air is excluded by superheated steam of the same or a higher temperature as the retort, second, by commingled superheated steam and hydrocarbon, and, finally, by a fixing agent whereby the alloy or compound surface formed by the action of the first three agents is fixed by the action of the last, substantially as described.

No. 29,568. Apparatus for Oxidizing the Surface of Metals.

(*Appareil pour oxyder la surface des métaux.*)

George W. Gosner, New York, N. Y., U. S., 27th July, 1888; 5 years.

Claim.—1st. In the treatment of metallic articles, a retort or muffle for holding the articles combined with an open arched superheater arranged within the muffle, having deflecting-plates arranged within the same to form a circuitous passage, pipe connections from said superheater to a boiler or other source of steam, and connections between the superheater and muffle, substantially as described. 2nd. In the treatment of metallic articles, a retort or muffle for holding the articles having a vertical and horizontal position, a superheater arranged within the horizontal portion, thereby leaving the vertical portion free for the articles to be treated, pipe connections between said superheater and a steam source, and connections with the interior of the muffle from the superheater, substantially as described. 3rd. In the treatment of metallic articles, a retort or muffle for the articles to be treated, a superheater within the same, pipe connections with a suitable steam source, connections with the retort, inlet pipes for the gases and hydrocarbon, and a spraying device connecting the various pipes within the muffle, said spraying device being deflected upwardly to direct the agents directly against the articles treated, with suitable cocks to regulate the flow through one or more of said pipes and cutting it off altogether, substantially as described.

No. 29,569. Bob-sleigh.

(*Traineau accouplé.*)

Joseph W. Shourds, Reedsburg, Wis., U.S., 27th July, 1888; 5 years.

Claim.—1st. In a bob-sleigh, the combination, with the runner, of the knee attached to the runner and comprising the converging sides or legs, *m, m*, the beam and the wear plate secured to the beam, and having a keeper engaging the upper end of the knee, substantially as specified. 2nd. In a bob-sleigh, the combination of the wear plate secured to the beam, and having a depending apertured ear *K*, the keeper *L*, on the plate, the knee secured to the runner and having the converging legs *m, m*, mounted at their upper ends on the keeper *L* and the brace *N* having a hook *O* engaging the apertured ear *K*, and divergent arms *U, O* attached to the runner, substantially as and for the purpose specified. 3rd. In a bob-sleigh, the combination, with the front and rear beams mounted on the runners, as described, of the front bolster having keepers *D* on its rear side, the side raves *B* having loops on their front ends engaged in the keepers and the rear bolster attached to the raves, substantially as specified. 4th. In a bob-sleigh, the combination, with the beams and runners, of the side raves loosely connected or pivoted to the sleigh and adapted to be removed, substantially as specified. 5th. In a bob-sleigh, the combination of the front and rear beams having the runners attached thereto, the reach attached to its front end to the front beam, the half-circle attached to the rear beam and having a tapped aperture at its centre, and the bolt passing through the reach and engaging the said tapped aperture, substantially as specified.

No. 29,570. Car Axle Lubricator.

(*Boîte à graisse.*)

James J. Stevor, Owosso, Mich., U.S., 27th July, 1888; 5 years.

Claim.—The combination of the frame *D* having ears *E* or their equivalent, the frames *F* hinged thereto, the springs *S* supporting said frames, rollers *I* having indentations, substantially as described, the frames *F* being arranged to project in opposite directions, so that said rollers will bear under the journal on opposite sides of its axis, substantially as set forth.

No. 29,571. Air Inlet and Seal for Waste Water Pipes.

(*Prise d'air et fermeture pour tuyaux de renvoi.*)

Ezra S. McCollan, Paterson, N. J., U. S., 27th July, 1888; 5 years.

Claim.—1st. The combination, with the vessel *A* and inlet air pipe *C*, of the bell-shaped cylinder *B*, and pipe *C* leading to the waste pipe *G* and the inverted cup-shaped valve *F* within the cylinder *B*, and the mercury seal into which the lower end of the valve *F* passes, substantially as set forth. 2nd. The combination, with the vessel *A*, air inlet pipe *C* and cylinder *B*, of the pipe *C* leading to the waste pipe *G*, and the inverted cup-shaped valve *F*, the trap *B*, the pipe *E* leading from the bottom of the trap, the mercury vessel *F*, the displacer *U* and the pipe *R* leading from the vessel *A* to the pipe *E*, whereby the mercury seal in the vessel *A* is raised and lowered simultaneously with the mercury seal in the trap *B*, substantially as set forth. 3rd. A vessel containing mercury, an inverted cup-shaped air valve with the lower part thereof in the mercury, an air inlet within the cup-shaped valve, a case and a pipe to connect with a sewer or drain pipe, substantially as set forth.

No. 29,572. Equalizing Adjustable Pliable Truss.

(*Bandage hernaire élastique à compensation.*)

William Payne and William H. Payne, Thamesford, Ont., 27th July, 1888; 5 years.

Claim.—1st. The pad *B*, frame *A* and coil spring *C*, in combination with a belt *H*, and means for securing them together, as and for the purpose set forth. 2nd. A pad *B* formed with a concave *B* conforming to the shape of the rupture, frame *A* and coil spring *C* in combination with a belt *H*, and means for securing them together as and for the purpose set forth. 3rd. A pad *B* formed with perforations *B*, frame *A* and coil spring *C*, in combination with a belt *H*, and means for securing them together, as and for the purpose set forth. 4th. The pad *B*, frame *A* and coil spring *C*, in combination with the belt *H* and leg straps *J, J*, and means for securing them

together, as and for the purpose set forth. 5th. The frame A, formed with one or more slots E, and one or more slides D fitted thereto, and the slides D formed with one or more hooks G and flanges d and spring F, in combination with the belt H, coil spring C and pad B, as and for the purpose set forth. 6th. The pad B, coil spring C and frame A formed with one or more slots E, and one or more slides D fitted thereto, and formed with one or more hooks G and flanges d and spring F, in combination with the belt H, buckle I formed with openings H and flap L, as and for the purpose set forth. 7th. The pad B, coil spring C, and frame A, formed with slot E, slide D, formed with one or more hooks G and flanges d, buckle I, and spring F, in combination with the belt H and leg straps J, J', as and for the purpose set forth. 8th. The pad B, coil spring C and frame A, in combination with the belt H, leg straps J, J', buckle K having pivotal tongue K' formed with pointed ends K₂, and angular pointed ends K₃ and spring K₄, as and for the purpose set forth.

No. 29,573. Double Equalizing Adjustable Pliable Truss. (*Double bandage herniaire élastique à compensation.*)

William Payne and William H. Payne, Thamesford, Ont., 27th July, 1888; 5 years.

Claim.—1st. In a double truss, the extension frames A, A, extended or contracted by sliding on one another, and means for securing and holding them together at the point to which they are adjusted, in combination with the belt H, coil springs C and pads B, as and for the purpose set forth. 2nd. In a double truss, the extended frames A, A having perforations A₁ and A₂ in the extensions of these frames, in combination with the spring L having stop a₂, as and for the purpose set forth. 3rd. In a double truss, the extended frames A, A, both having flanges a₁, and having perforations A₁ and A₂ in the extensions of these frames, in combination with the spring L having stop a₂, as and for the purpose set forth. 4th. In a double truss, the extended frames A, A having flanges a₁ and having perforations a₁ and a₂ in the extensions of these frames, and the spring L having stop a₂, in combination with a belt H, coil springs C and pads B, as and for the purpose set forth. 5th. In a double truss, the extended frames A, A having flanges a₁, and having the perforations a₁ and a₂ in the extensions of these frames, and spring L having stop a₂, in combination with belt H, coil springs C, pads B, leg straps J, J' and buckles I, I' and K, as and for the purpose set forth.

No. 29,574. Malt Machine. (*Machine à malt.*)

John W. Free, Boston, Mass., (Co-inventor with Michael A. Barber, Norwich, Conn.), U. S., 27th July, 1888; 5 years.

Claim.—1st. In a malting machine, a malting floor oblong in shape having parallel sides and semi-circular ends, the walls C, D of said malting floor being parallel to each other, and the straight sides of said walls equal in length to each other, and the curved sides of the inner and outer walls being concentric with each other, in combination with the stirring drum B adapted to be carried continuously around the malting floor by chains F, L, which chains engage with the carriages G, G, and which stirring drum B is adapted to be revolved upon its own axis by means of gearing applied to the inner end of its shaft b, and in further combination with the reciprocating carriage H and its ways I, substantially as described. 2nd. The combination of the carriage H, its hook g and chain F, arranged and operated substantially as described. 3rd. The combination of the yoke H, shaft b, carriage H, chain K and sprocket and bevel gear h, h', h'', substantially as described. 4th. The combination of the malting floor having semi-circular ends, with the stirring drum B, the pivoted yoke H and the exterior driving chain L, substantially as described. 5th. In a malting machine, the combination of a malting floor oblong in shape having parallel sides and semi-circular ends, with an agitating device, and means for automatically causing it to traverse continuously in one direction the said floor, substantially as described. 6th. The combination in a malting machine, of a floor having a straight section and parallel sides, with an agitating device, and means for moving it automatically from one end of said straight section to the other, substantially as described.

No. 29,575. Malt Growing and Drying Apparatus. (*Machine à produire et sécher le malt.*)

John W. Free, Boston, Mass., (assignee of Michael A. Barber, Norwich, Conn., Andrew Wiggin and William Soar, Boston, Mass.), U. S., 27th July, 1888; 5 years.

Claim.—1st. In a malting apparatus, as a means for stirring, agitating, breaking up and separating the malt in the process of manufacture, a series of elevating buckets of varying lifting capacity, mounted upon a progressive rotary shaft, as and for the purposes described. 2nd. In a malting machine, as a means for stirring, agitating, breaking up and separating the malt in the process of manufacture, a series of buckets mounted upon a horizontal shaft, having a progressive movement in a circular path in a cylindrical chamber, and set tangential to the circular path of movement of the buckets, substantially as described. 3rd. The combination in a malting machine of the circular chamber A, having the floor a and the wall A, of the central shaft B, a frame C carried thereby, and a shaft c mounted tangentially in said frame, and carrying or supporting one or more buckets provided with lifting blades and said buckets, as and for the purposes described. 4th. The combination, in a malting machine, of a chamber A having a floor a, a circular wall A, the shaft B, the frame C, the tangential shaft c, buckets D, the rail e and anti-friction roll e', substantially as described. 5th. The combination in a malting machine, of the circular chamber A having the floor a and wall A, the shaft B, the frame C, the shaft c mounted thereon, and the series of buckets D mounted upon the shaft, and graded as to their lifting capacity, as and for the purposes described. 6th. The combination in a malting machine, of the chamber A having the floor a and the wall A, the shaft

B, the frame C, the tangential shaft c, the buckets D carrying thereby, the shaft rotating devices carried by the frame C, the bevel gear h, h', h'', and the shaft h', substantially as described. 7th. The combination, in a malting machine, of the chamber A having the floor a and wall A, the rotary frame C, the revolving buckets D carried thereby, and the guide or turning plates E, E', substantially as described.

No. 29,576. Reel for Fishing Rods.

(*Rouet de manche de pêche.*)

William F. Kakas, Boston, assignee of Charles K. Bradford, Lynnfield, Mass., U. S., 27th July, 1888; 5 years.

Claim.—1st. A reel for fishing rods composed of a supporting frame, a shaft journaled in said frame and provided with a crank or handle, a drum or barrel mounted to rotate loosely on said shaft, and a spring interposed between the drum and barrel, and adapted to exert a continuous yielding rotative stress on the barrel, as set forth. 2nd. A reel for fishing rods composed of a supporting frame, a shaft journaled in said frame and provided with a crank or handle, a drum or barrel mounted to rotate loosely on said shaft, a spring interposed between the drum and barrel, and operatively engaged with said parts, whereby when the shaft is prevented from rotating the spring is caused to exert the yielding rotative stress on the barrel, and means whereby the shaft may be locked to the barrel to enable the latter to be positively rotated by the shaft, as set forth. 3rd. The combination of a supporting frame, a shaft h journaled therein and provided with a slot or procket z, a barrel or drum mounted to rotate loosely on the shaft, and a spring having a hook at its inner end detachably engaged with the pocket of the shaft, and having its outer end operatively engaged with the barrel, the described engagement of the inner end of the spring with the shaft enabling the spring to be disconnected from the shaft by a backward rotation of the latter, as set forth. 4th. The combination of a supporting frame, a shaft h journaled therein, a barrel or drum mounted to rotate loosely on the shaft, and a spring having its inner end engaged with said shaft, and its outer portion in frictional contact with the inner surface of the barrel, whereby the spring may slip on the barrel when fully wound, as set forth. 5th. The combination of the supporting frame, a shaft journaled therein and provided with a crank or handle, a barrel or drum mounted to rotate loosely on the shaft, and provided with a hub having pins or projections g, the spring operatively engaged with the barrel and shaft, and a bolt adapted to slide on the handle of the shaft into or out of engagement with the projections g of the barrel, as set forth.

No. 29,577. Land Roller. (*Rouleau d'agriculture.*)

George C. Fooso and Elmer E. Charles, Warsaw, N. Y., U. S., 27th July, 1888; 5 years.

Claim.—1st. In a land roller, the combination of the beam C jointed at e and bent behind roller A at i, the roller A loosely journaled and swinging on beam C, and the roller B journaled behind roller A, so as to overlap the inner end of first roller, all substantially as and for the purpose specified. 2nd. The herein described land roller comprising the rollers A and B, the roller A on a journal C, whose inner end sets loosely on the beam C, so as to swing over in front of the second roller when desired, all substantially as specified. 3rd. In a land roller, the beam C jointed at e and bent at f, as described, in forming the journal C' for the second roller B, and in combination with rollers A, B, all substantially as and for the purpose specified.

No. 29,578. Chemical Fire-Extinguisher.

(*Extincteur d'incendie chimique.*)

Harris B. Mitchell, Malden, Mass., U. S., 23th July, 1888; 5 years.

Claim.—A chemical fire extinguisher consisting of the main receptacle a, and supporting frames at the interior thereof, the fragile vessels supported in said frames, and the breaking device pivoted between said vessels and provided with breaking arms or projections, which in the rotation of said device engage and fracture the fragile vessels, and the discharge tube provided with a nozzle above the top of the main reservoir, and a sealing device for said nozzle connected with the handle of the breaking device, the rotation of which handle thus simultaneously causes the fracture of the fragile vessel, and the opening of the discharge nozzle, substantially as described.

No. 29,579. Holder for Rolls of Toilet or Wrapping Paper. (*Porte-rouleau de papier de garde-robe ou d'enveloppe.*)

Seth Wheeler, Albany, N. Y., U. S., 23th July, 1888; 5 years.

Claim.—1st. The toilet or wrapping paper holder e having opening f, and containing a tumbler g, in combination with the roll of paper suspended from the slotted connecting-link b, by means of which said holder and roll are connected together, substantially as described. 2nd. A holder provided with an opening to receive the suspending link of the roll of paper, and a tumbler or equivalent device for locking the link to the holder, substantially as described. 3rd. The holder consisting of an enclosing case containing a tumbler or locking device, arranged to retain the suspending link, substantially as described. 4th. The holder e containing the tumbler g, and provided with an opening f for the insertion of the suspending link b, substantially as described.

No. 29,580. Metallic Fence. (*Clôture métallique.*)

George H. Guile, Three Mile Bay, N. Y., U. S., 23th July, 1888; 5 years.

Claim.—1st. An improved fence post consisting of the pillar or standard A, having a series of angular grooves h, and the helical, shaped point G secured to the lower end of the pillar or standard, substantially as described. 2nd. In a metallic fence, the combination of the pillar or standard A having the series of grooves h, and provided with the helical shaped point G, the wires C having the

loops or eyes *k* in the grooves of the pillar, and the loops *l* connecting the necks of the said loops or eyes *k*, substantially as described.

No. 29,581. Dinner Pail. (*Potager Pourvier.*)

Frank G. O. Ehle, Buffalo, N. Y., U. S., 28th July, 1888; 5 years.

Claim.—1st. In a dinner pail, the combination, with a series of superposed pans or vessels, of a cover applied to the uppermost vessel, and provided with a handle having hooks or enlargements at its outer ends, and fastening baits or loops pivoted to the lowermost vessel, and engaging with the hooks or enlargements of the handle, substantially as set forth. 2nd. In a dinner pail, the combination, with a series of tapering superposed pans or vessels, of a cover *C* applied to the uppermost vessel, and provided with a pivoted handle *D* having hooks or enlargements *d* at its outer ends, loops or baits *E* pivoted to the lowermost vessel and engaging with the hooks *d*, and loops *f* pivoted to the uppermost or largest of said vessels and adapted to engage with the hooks *d* when the vessels are nested, substantially as set forth. 3rd. The combination, with the series of tapering superposed vessels, and the cover *C* applied to the uppermost vessel, of a handle pivoted to said cover and provided with hooks *d*, and notches *g* and loops *f* pivoted to said uppermost vessel, and adapted to engage with the hooks *d* when the handle stands at an angle to the cover, and in said notches when the handle is folded against the cover, substantially as set forth.

No. 29,582. Fence. (*Clôture*)

Nelson Kimball, London, Ont., 28th July, 1888; 5 years.

Claim.—The metallic stakes *B*, secured to the rails of a fence by suitable wires *b*, and provided with feet *C* for retaining the same in the ground, and in combination therewith the wooden stakes *E* secured by wires *c*, substantially as shown and specified.

No. 29,583. Centrifugal Machine for Starch and Gluten. (*Machine centrifuge pour l'amidon et le gluten*)

Louis Eisenbach and Robert Ador, San Francisco, Cal., U. S., 28th July, 1888; 5 years.

Claim.—1st. The central cone *C* having the rim *D*, in combination with the centrifugal separating settler *B*, constructed and operated substantially as and for the purposes set forth. 2nd. The centrifugal separating settler *B*, constructed in sections as shown, and maintaining the central cone *C* and rim *D* when united, constructed and operated substantially as and for the purposes set forth. 3rd. The centrifugal separating settler *B*, central cone *C* with riffler *D*, the discharge spouts *I* and *J*, combined and operated substantially as and for the purposes set forth.

No. 29,584. Machine for Making Building Anchors. (*Machine à faire les tirants de construction.*)

Jacob Russell, Brooklyn, N. Y., U. S., 28th July, 1888; 7 years.

Claim.—1st. The combination of a bed to support the mechanism, a die *e* thereon to support the end of the bar *a*, a reciprocating presser-foot *d* to hold the anchor bar down while the work is being performed, a reciprocating plunger die *f* to form the primary bend for the eye in the end of the anchor-bar, and the reciprocating closing die *c* for closing the eye in said bar, substantially as set forth. 2nd. The combination of a bed to support the mechanism, a support for the bar, the reciprocating presser-foot, as *d*, for holding the said bar down firmly while being operated on, and a twister for twisting said bar while thus held, said twister consisting of two reciprocating jaws which move in parallel planes simultaneously in opposite directions, substantially as set forth. 3rd. In a machine for making building anchors, the combination of the hollowed die *e*, the reciprocating plunger die *f*, the reciprocating presser-foot *d* arranged to bear on the anchor-bar close to the hollow in die *e*, the anvils or supports *g* for the other end of the anchor-bar, the reciprocating presser-foot *d*, and the reciprocating end-bender *c*, said foot *d* serving to hold down the bar while the bend is being made, as set forth. 4th. The combination, with the bed to support the mechanism of the hollowed die *e* on which the end of the bar *a* rests, the reciprocating foot *d* to hold the bar down upon said die, the trough-like receiver *s* for the spear aligned properly with the die *e*, as described, the reciprocating pusher *t* aligned with and guided in said receiver, and a reciprocating closing die *c* adapted to close the eye in said bar when the spear is in place, substantially as set forth. 5th. In a machine for making building anchors, a twister for twisting the body of the anchor comprising two reciprocating jaws *g*, *h*, which move in parallel planes simultaneously in opposite directions, substantially as set forth. 6th. The combination, with the shaft *B*₃, of the slides *K* and *K*₁ mounted in guides and adapted to play in parallel planes, the jaws *g* and *h* on the respective slides, the cams *h*₁ and *h*₂ on shaft *B*₃ which impart a reciprocating movement to slide *K*, and the cams *i*₁ and *i*₂ on the shaft *B*₂ which impart a reciprocating movement to slide *K*₁, said slides moving in opposite directions simultaneously, substantially as set forth. 7th. The combination, with the machine bed, the supports for bar *a* and the shaft *B*₃, of the device for discharging or pushing off the finished anchor, said device consisting of the cam *l*, the lever *M* fulcrumed at *K*₁, and the upright arm *h* of said lever, said arm being arranged to cross the space between said bar-supports in its vibrations, substantially as set forth. 8th. The combination with the machine bed, of the frame *C*₂ mounted in guides thereon, the rack and pinion for effecting the movement of said frame mounted on the bed and frame respectively, the main shaft *B* having a sliding bearing in said frame, the shaft *B*₃ mounted in the said frame, the gears *k*, the slides *p*, *m* mounted in guides in said frame, the bender *c* attached to slide *p*, the foot *d* attached to slide *m*, the cams *n*, *o*, *q*, *r* on shaft *B* for operating said slides, and the anvils or supports *g* for the bar *a* carried by frame *C*, substantially as set forth. 9th. The combination, with the bed and frame

*C*₁, of the shaft *B*₄ mounted in said frame, the slides *g* and *j* mounted in guides in said frame, the cams *h*, *i*, *k*, *l* on shaft *B* for operating said slides, the plunger die *f* attached to slide *j*, the presser-foot *d* attached to slide *g*, and the die *c* carried by frame *C*₁, substantially as set forth. 10th. The combination, with the trough-like receiver *s* for the spear *v* of the guided pusher *t*, longitudinally aligned with and adapted to play in said receiver, the lever *F* fulcrumed at *n*, and coupled at its upper end with pusher *t*, the slide bar *r* coupled at its lower end to said lever *F*, and the cam *q* provided with a groove engaged by a stud or roller *u* on rod *v*, substantially as set forth. 11th. The combination, with the hopper *E* having returned ends *w*, *x*, of the trough-like receiver *s* at the bottom of said hopper to receive the lower spear of the series, as set forth. 12th. The combination, with the slide *j* provided with a hollow or recess *pi* at its lower end, of the plunger die *f* secured to said plate below said recess, whereby the metal back of said die is weakened, for the purposes set forth.

No. 29,585. Improvements in Operative Dentistry. (*Perfectionnements dans l'art dentaire.*)

Charles H. Land, Detroit, Mich., U. S., 28th July, 1888; 5 years.

Claim.—1st. The herein described tooth crown, consisting essentially of a metallic cover shaped to conform to the outline of the tooth to be crowned, a previously prepared porcelain veneer fitted to said cover, and an intermediate stratum of porcelain paste, whereby the veneer may be fused to the cover, substantially as set forth. 2nd. The herein described tooth crown, consisting essentially of a metallic cover having a flange projection at its outer end, forming a depression to support the paste, the said cover shaped to conform to the outline of the tooth to be crowned, a previously prepared porcelain veneer fitted to said cover, and an intermediate stratum of porcelain paste, whereby the veneer may be fused to the cover, substantially as set forth. 3rd. The herein described tooth crown, consisting essentially of a metallic cover, shaped to conform to the outline of the tooth to be crowned, the said cover being provided with a flange projection at its outer end, and with pins projecting from the said flange projection, a previously prepared porcelain veneer fitted to the said cover, and an intermediate stratum of porcelain paste located between the veneer and the cover, and in contact with the flange projection, whereby the veneer may be fused to the cover and be held firmly in position, substantially as set forth.

No. 29,586. Water Closet Hopper and Bowl. (*Cuvette de siège-Passance.*)

Alfred Ivers, New York, N. Y., U. S., 28th July, 1888; 5 years.

Claim.—The closet hopper or bowl herein described having in its side a water supply channel or feeder, extending substantially upright on the exterior thereof, and communicating with the interior thereof by a slot, which also is substantially upright in the hopper or bowl, as and for the purpose herein described.

No. 29,587. Door Bell and Alarm.

(*Timbre-avertisseur de porte*)

Frederick Sanderson, Chicago, Ill., U. S., 28th July, 1888; 5 years.

Claim.—1st. The combination, substantially as set forth, of the bell, its hammer, the hammer stem, a cam to vibrate the hammer and stem, and the lug *I* against which the hammer stem impinges just before the hammer strikes the bell. 2nd. The combination, substantially as set forth, of the bell, its hammer, the hammer stem, a cam to vibrate the hammer and stem, and the lugs *I* and *J* between which the hammer stem vibrates. 3rd. The combination, substantially as set forth, of the bell, its hammer, the hammer stem, the disc cam with a corrugated edge, and the arm *H* pivoted to the hammer stem and carrying the friction rollers to embrace the cam edge. 4th. The round push bar *N* having round bearings to guide it, and the rack teeth on it to drive the train mechanism and to hold the bar in position, substantially as set forth. 5th. The push bar *N* extending through a guide hole in the casing *B*, and having its end push therewith when at the limit of its backward motion, substantially as and for the purpose set forth. 6th. The round push bar *N* having round bearings to guide it, the rack teeth on it to drive the train mechanism, and the flat head on one end of the bar, in combination with the push button and the rod *R*, the rod adjustably connecting the button and the push bar, substantially as shown and described and for the purpose set forth. 7th. The combination of the round push bar *N* having the rack teeth and flat head, the push button, the rod *R* adjustably connecting the push button and the push bar, and the casing *B* having a guide hole through which the push bar moves, and whose end is flush therewith when the parts are normally at rest, substantially as shown and described for the purpose set forth. 8th. The rim or flange *X*, in combination with the casing and door, whereby the push bar, spring and push button are centered and friction avoided, substantially as shown and described and for the purpose set forth.

No. 29,588. Slate for Telephone Desks.

(*Ardoise-pupitre pour téléphones.*)

Emil T. Mueller, LaCrosse, Wis., U. S., 30th July, 1888; 5 years.

Claim.—1st. A slate for telephone desks, consisting of a sheet of suitable material covered with a slate composition, and having clips formed with bent arms adapted to engage the edges of the top of a desk, substantially as shown and described. 2nd. A slate for telephone desks consisting of a sheet of suitable material covered with a slate composition, and having retaining clips adapted to clamp the edges of a desk, and hooks to hold a slate or lead pencil, substantially as described. 3rd. A slate for telephone desks, consisting of slate *l* having clips *3* secured thereto by bent lips *4*, and pencil retaining hooks *11* secured thereto by bent lips *12*, substantially as described.

No. 29,589. Machine for Automatically Making Screw Blanks. (*Machine à faire les ébauches des vis automatiquement.*)

The American Screw Company, (assignee of Charles D. Rogers), Providence, R. I., U.S., 30th July, 1888; 15 years.

Claim.—1st. In a machine for making screw blanks, a gripping-clamp with its cavity forming an extension of the cylindrical hole of the separate solid die, which is provided with a cavity in which heads are to be formed to grasp and hold the wire in the proper position in the solid die against the thrust of the heading hammers in upsetting the metal to form a head, substantially as set forth and described. 2nd. In a machine for making screw blanks, the combination of two intermittent feeding devices, one of which grips the wire near the entrance of the supporting tube which leads to the gripping-clamp and solid die, and the other of which grips the wire at a sufficient distance from the end of the supporting tube to feed forward the length of wire required for a screw blank, substantially as set forth and described. 3rd. In a machine for making screw blanks, a series of three or more heading-hammers mounted in a support which is provided with means for bringing each hammer in turn into line with a die in which the head of a blank is to be formed, and means for locking it in such position until it has been forced against the metal in the die, substantially as set forth and described.

No. 29,590. Wood Screw. (*Vis à bois.*)

Claim.—A wood-screw with a flat faced head formed by forging in a solid die and having a flat across the face, with walls and sides vertical, or nearly so, and closed at the ends, and so adapted to receive the blade of an ordinary screw-driver to force ice screw into the wood.

No. 29,591. Atomizer. (*Pulvérisateur d'eau.*)

Thomas B. E. Beall (assignee of Sylvester W. Beall), Columbus, Ohio, U.S., 30th July, 1888; 5 years.

Claim.—1st. In combination with an elastic bulb, its upper and lower tubular metal connections and a valve on side of said lower connection, a straight tube passing diametrically through said bulb and through said tubular connections, substantially as and for the purpose described. 2nd. The combination of an elastic bulb, its upper and lower tubular connections and a valve on the side of said lower connection, with a tube passing diametrically through said bulb, a shield upon said tube, a perforated tip upon the end and longitudinal passages between said tubes and shield, substantially as and for the purpose described.

No. 29,592. Process for Making Counter-sunk Perforations in Castings. (*Mode de faire des trous fraisés dans la fonte.*)

Arthur Lacoste, Montreal (assignee of Charles Charruau, Longueuil), Que., 30th July, 1888; 5 years.

Claim.—1st. In a casting, the use of a chill to produce a hole and countersink for the purpose and in the manner shown and described. 2nd. In a casting, the use of a chill A having the two members b and c, for the purpose described and set forth.

No. 29,593. Iron Harrow. (*Herse de fer.*)

George Keeloy, Vankleef Hill, Ont., 31st July, 1888; 5 years.

Claim.—1st. The tooth holder or clip C consisting of a rectangular tube having lips *a, a'* at the end, raised edges *b, b'* on the outside at top, and provided with a hole *e* through said top and intervening said edges, and internal *t* projecting downwardly from the top, as set forth. 2nd. A harrow consisting of bars A, clips C, bolts E standing through the top of the clips, and teeth D having a shank *d* clamped together in driving said shank, and bars B secured to the outside of the clip by bottle and nut *c*, as set forth.

No. 29,594. Combined Hay Rake and Loader. (*Râteau monte-foin.*)

Lucius H. Dwoley, Foxcroft, Me., U.S., 31st July, 1888; 5 years.

Claim.—1st. The combination, with a wagon or cart, of a friction wheel mounted on a movable arm or support, and rotated by contact with one of the wheels of said wagon or cart, a load-lifting wheel engaged and rotated by said friction-wheel, and gearing between the load-lifting and friction-wheels, whereby the resistance produced in turning the lifting-wheel increases the friction between the friction and wagon or cart wheels, substantially as herein described. 2nd. The combination, with a wagon or cart, of a friction wheel mounted on a movable support and adapted to be brought into contact with and rotated by one of the wheels of the said wagon or cart, a pinion operated by the said friction-wheel, a load-lifting wheel provided with teeth meshing with the pinion and adapted to be moved thereby, a rake or loading device pivotedly connected to the side of the wagon or cart, a chain or rope operated by the load-lifting wheel connected to and operating the rake or loading device, substantially as described, and the slide *a* connected with and operated by the hand-wheel *d* for actuating the movable support of the friction-wheel to bring the latter into contact with the wagon or cart wheel, substantially as set forth. 3rd. The combination, with the friction-wheel *a* and the movable arm or support *u* on which it is mounted, of the slide *a'* provided with an inclined groove *v* for the reception of a stud or projection on the arm *u*, and having the operating-rod *b* connected thereto, substantially as described. 4th. The combination, with the friction-wheel *a* and the movable arm or support *u* on which it is mounted, of the slide *a'* provided with an inclined groove *v* for the reception of a stud or projection on the arm *u*, and having the rod *b* connected therewith, the crank *l*, the vertical shaft *e* and the hand-wheel *d*, all operating substantially as described. 5th. The combi-

nation, with a wagon or cart, of a rake or loading device having an arm or arms adapted to fit into a socket or sockets in its carrier, and made detachable therefrom, and a locking or fastening device for holding the said rake or loading device in place, substantially as set forth. 6th. The combination, with the friction-wheel *a*, mounted on a movable arm or support, and adapted to be brought into contact with the wagon or cart wheel *G*, of the load-lifting-wheel *D* provided with a projection *e* located in position to engage the support of the friction-wheel, and automatically throw the latter out of contact with the wagon or cart wheel when the load is raised to the desired height, substantially as herein described. 7th. The combination, with the carrier shaft *d* mounted on a wagon or cart and provided with sockets *g*, of the rake or loading device *B* having arms *c* adapted to fit into the sockets *g* and made detachable therefrom, and the hook or latch *h* for securing the rake or loading device when adjusted in place, all operating substantially as described.

No. 29,595. Propeller Wheel. (*Méléc.*)

Walter L. Strong, San Francisco, Cal., U. S., 31st July, 1888; 5 years.

Claim.—The propeller consisting of the hub and spirally disposed blades projecting radially therefrom, in combination with the hoop or band secured to, and enclosing the forward portion of, the blades, while the rear portion of the blades are enclosed and extend rearwardly from the hoop or band, substantially as herein described.

No. 29,596. Bed-Bottom. (*Sommier de lit.*)

Walter B. Noyes, Chicago, Ill., U.S., 31st July, 1888; 5 years.

Claim.—1st. The combination, with the frame of the bed bottom, of a transverse roller journaled at the end of the frame, and provided with an arm *r* lever, a tension spring secured at one end to said arm or lever, and with its opposite end to the frame of the bed bottom, and a woven wire or other flexible support secured with its end to said roller, substantially as set forth. 2nd. The combination, with the frame of the bed bottom provided with a series of pins or projections *g*, of a transverse roller *B* journaled at the end of the bed frame, and provided with arms *E*, and with their opposite ends to one of the pins *g*, and a woven wire or other flexible support secured with one end to said roller, substantially as set forth. 3rd. The combination, with the frame of the bed bottom, of a roller *B* journaled in said frame, and provided at both ends with caps *b* having journals *b'*, arms *E* formed on or secured to said caps, tension springs *F* secured at one end to the arms *E*, and at their opposite ends to the frame of the bed bottom, and a woven wire or other flexible support *C* secured at one end to the frame of the bed bottom and its other end to the roller *B*, substantially as set forth.

No. 29,597. Churn. (*Baratte.*)

Cydnor B. Campbell, Gloucester, Ohio, U.S., 31st July, 1888; 5 years.

Claim.—1st. In a churn, the combination, with the churn having the upwardly-projecting screw in its bottom, of the cylinder supported on short legs and having the central threaded bottom opening, the perforated rim or sides and the bottom and top openings, the valves, the piston and piston-rod, the revolving crank-shaft and the connecting-pitman, substantially as set forth. 2nd. In a churn, the combination, with the churn-body having the upwardly projecting screw in its bottom, of the cylinder supported on short legs and having the central threaded bottom opening, the perforated rim or sides, the removable top, and the bottom and top openings, the valves and the reciprocating piston, substantially as set forth. 3rd. In a churn, the combination, with the churn-body having the hinged cover, of the cylinder supported on short legs having the perforated rim or sides, and the bottom and top openings, the valves, the piston and piston-rod, the perforated dasher-blades connected by the cross bars, and having the clutch-collar at their upper ends, the pinion having the downwardly extending clutch-collar, the compound gear-wheel, the crank shaft having the pinion and the balance-wheel upon it and the connecting pitman, substantially as set forth. 4th. In a churn, the combination, with the churn-body having the hinged cover, and the retaining screw in its bottom, of the cylinder supported on short legs, and having the central threaded bottom opening, the removable rim or sides, the top bearing, the removable top, and the bottom and top openings, the valves, the piston and piston-rod, the perforated dasher-blades connected by the cross-bars and having the clutch-collar at their upper ends, the pinion having the downwardly extending clutch-collar, the compound gear-wheel, the crank shaft having the removable pinion, and the balance-wheel upon it, and the connecting-pitman secured at its lower end to the piston-rod by the removable key, substantially as and for the purpose herein set forth.

No. 29,598. Weighing Scale. (*Balance.*)

Marshall B. Lloyd, Cavalier, Dak., U.S., 31st July, 1888; 5 years.

Claim.—The combination in a scale of the beam *12* provided with the series of graduations, the beam *20* connected with said beam *12*, and provided with the notches *48* corresponding to the graduations on the beam *12*, and the slide *12* mounted on said beam *20* and supporting a suitable platform, whereby said slide may be arranged over either of said notches, and the weight will be indicated by the corresponding graduation on the beam *12*.

No. 29,599. Washing Machine.

(*Machine à blanchir.*)

Jared M. Boughton, East Saginaw, Mich., U. S., 31st July, 1888; 5 years.

Claim.—In a washing-machine, the combination of the rocker *A* having arms provided with slots *f*, an axle *a* passing through said slots, a rod *c* and springs *b* coiled around said rod, and having one end attached to the axle and the other end adjustably secured to the rocker, as and for the purpose set forth.

No. 29,600. Sole Fitting or Repairing Mechanism. (*Machine à tailler les semelles.*)

Andrew Eppler, Jr., Boston, Mass., U.S., 31st July, 1888; 5 years.

Claim.—1st. The combination of the bed roll, the feed wheel, the vertically movable yoke or frame *f* supporting the feed wheel, and provided with a depressing spring, a lever whereby said yoke may be raised to elevate the feed wheel, the edge bevelling knife, the spring depressed holder therefor, and means substantially as described for independently raising said knife, as set forth. 2nd. The combination of the bed roll, the feed wheel, the vertically movable yoke or frame supporting the feed wheel and provided with a depressing spring, a lever whereby said yoke may be raised to elevate the feed wheel, the channeling knife and the spring depressed holder therefor arranged as described to be raised by the yoke *F*, and an adjustable stop to limit the downward movement of the channeling knife, as set forth. 3rd. The combination of the bed roll, the feed wheel, the vertically movable yoke or frame *f* supporting the feed wheel, and provided with a depressing spring, a lever whereby said yoke may be raised to elevate the feed wheel, the edge bevelling knife, the spring depressed holder therefor, a connection substantially as described between said holder and the yoke or frame *f*, whereby the holder and knife are raised by said frame, and means substantially as described for independently raising said knife and holder, as set forth. 4th. The combination of the bed roll, the feed wheel, the spring depressed vertically movable frame supporting the shaft of the feed wheel, means substantially as described for raising said frame, the edge bevelling knife, the vertically movable holder for said knife engaged with said frame to be elevated thereby, and a vertically adjustable stop which limits the downward movement of said holder, as set forth. 5th. The combination of the bed roll, the feed wheel, the vertically movable spring depressed frame supporting the shaft of the feed wheel, means for raising said frame, the vertically movable knife holders *B*, arranged to be raised by the yoke *f*, and provided with depressing springs, as set forth. 6th. The combination of the supporting frame, the bed roll, its shaft, the yoke or frame pivoted to the fixed supporting frame, the feed wheel mounted on a shaft journaled in said yoke, the crank shaft *i* journaled in said yoke and connected as described by gearing with the shafts of the bed rod and feed wheel, whereby

said roll and wheel are positively rotated in opposite directions, a spring whereby the pivoted yoke and feed wheel are depressed, a lever whereby said yoke and feed wheel may be raised and vertically movable holders *B*, provided respectively with an edge bevelling knife, and a channeling knife, and arranged to be raised by the yoke *f*, spring *u*, *C*, whereby the said holders are depressed and adjustable stops, whereby the depression of the said holders is regulated, as set forth. 7th. The combination of the supporting frame, the bed roll journaled therein, the yoke or frame *f* pivoted to the supporting frame, the feed wheel mounted on the shaft which is journaled in said yoke, the lever *o* pivoted to the supporting frame and adapted to raise the yoke, the vertically movable knife holder *r* having the edge bevelling knife *r*, the spring *u* whereby said holder is depressed, and the pivoted lever *dt*, whereby said holder may be independently raised. 8th. The combination with the bed roll, the feed wheel and the bevelling and channeling knives, of the laterally movable edge guide, the pivoted lever supporting said guide and adjustable stops for said lever, as set forth. 9th. The combination with the bed roll, the feed wheel, and the bevelling and channeling knives, of the gages or feet *k*, *L* arranged to bear on the upper surface of the sole at opposite sides of the feed wheel and in advance of said knives, as set forth. 10th. The combination of the supporting frame or standard *ai*, the longitudinally adjustable shaft *ci* journaled therein, the vertically movable shaft *fi* having a yielding movement, and the frusto-conical rolls *n1*, *o1* mounted on said shafts, the smaller end of one of said rolls having a flange which overlaps the larger end of the other roll, the said rolls being made adjustable by the longitudinal adjustability of the shaft *ci* and by the yielding movement of the shaft *fi*, as set forth. 11th. The combination of the supporting frame or standard, the adjustable bearing *bi* thereon, the shaft *ci* journaled in said bearing and adjustable therewith, the yoke *pi* pivoted to the supporting frame and having a depressing spring, the shaft *fi* journaled in said yoke, and the rolls *n1*, *o1* mounted respectively on the shaft *fi*, *ci*, one of said rolls having a flange *n1* overlapping the larger end of the other roll, as set forth. 12th. The combination with the conical rolls *n1*, *o1*, the former having a flange *n1* smaller end overlapping the larger end of the latter, and the guide *ai* formed to support the edge of a sole while it is being presented to said rolls, as set forth.

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

1174. C. WHEAT and A. CATCHPOLE, 2nd 5 years of No. 17,355, from the 24th day of July, 1888. Improvements on Heating Apparatus, 3rd July, 1888.
1175. J. J. LAPPIN and P. CLARKE, (assignee) 2nd 5 years of No. 17,213, from the 11th day of July, 1888. Improvement in the Art or Process of Manufacturing Brake Shoes for Braking Car Wheels in Railway Trains and other Car Wheels, 6th July, 1888.
1176. H. F. COOMBS, 2nd 5 years of No. 17,226, from the 12th day of July, 1888. Improvements on Boats, 11th July, 1888.
1177. M. B. CHURCH, 2nd 5 years of No. 17,231, from the 12th day of July, 1888. Improvement in Feed Regulators for Grinding Mills, 11th July, 1888.
1178. M. B. CHURCH, 2nd 5 years of No. 17,232, from the 12th day of July, 1888. Improvement in Coating and Painting Exterior Surfaces, 11th July, 1888.
1179. M. B. CHURCH, 2nd 5 years of No. 17,257, from the 13th day of July, 1888. Improvement in Grinding Mills, 11th July, 1888.
1180. P. BEAUCHEMIN, 2nd 5 years of No. 18,138, from the 20th day of November, 1888. Improvements in Hay Rakes, 14th July, 1888.
1181. J. M. THAYER, T. KING and J. C. COOMBS, 2nd 5 years of No. 17,339, from the 21st day of July, 1888. Improvements on Car Heaters, 11th July, 1888.
1182. THE CUSHING PROCESS CO. (assignee), 2nd 5 years of No. 17,471, from the 11th day of August, 1888. Improvements on Process of, and Apparatus for Purifying and Maturing Liquors or Distilled Spirits, 18th July, 1888.
1183. C. ROTH, 2nd and 3rd 5 years of No. 27,910, from the 2nd day of November, 1892. Improvements in the Manufacture of Explosives, 19th July, 1888.
1184. J. WALSH (assignee), 2nd 5 years of No. 17,414, from the 4th day of August, 1888. Improvements in the Art of Constructing Sheet Metal Cans, 19th July, 1888.
1185. L. HUSSEY and G. W. DONALDSON, 2nd 5 years of No. 17,517, from the 18th day of August, 1888. Improvements on Apparatus for Re-heating Exhaust Steam, Heating Air and Superheating Live Steam, 21st of July, 1888.
1186. T. TOBIN, 2nd 5 years of No. 17,340, from the 21st day of July, 1888. Improvements in chamfering machines, 21st July, 1888.
1187. R. E. BALL, 2nd 5 years of No. 17,361, from the 24 day of July, 1888. Improvements on Dynamo-Electric Machine, 23rd July, 1888.
1188. M. DONNELLY, 2nd 5 years of No. 17,387, from the 26 day of July, 1888. Improvements on Sash Lifters and Fasteners, 25th July, 1888.

JULY LIST OF TRADE MARKS.

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3213. MARK SMITH, of Hamilton, Ont. Specially prepared entire or whole Wheat Meal, for the making of bread, porridge, pastry, blanc-mange, pudding, infants' and invalids' food, etc., 3rd July, 1888.
3214. JOHN TAYLOR, of Toronto, Ont. Soap, 9th July, 1888.
3215. THE APOLLINARIS COMPANY, LIMITED, of 19 Regent Street, London, England. Mineral Waters, 11th July, 1888.
3216. THE APOLLINARIS COMPANY, LIMITED, of 19 Regent Street, London, England. Mineral Waters, 11th July, 1888.
3217. THE APOLLINARIS COMPANY, LIMITED, of 19 Regent Street, London, England. Mineral Waters, 11th July, 1888.
3218. THE APOLLINARIS COMPANY, LIMITED, of 19 Regent Street, London, England. Mineral Waters, 11th July, 1888.
3219. EMILIEN ALFRED MANNY, de Beauharnois, Que. Pièce d'ajustage pour conduit d'eau, gaz ou vapeur et accessoire, 11 Juillet, 1888.
3220. JOHN SHAW AND SONS, WOLVERHAMPTON, LIMITED, of Wolverhampton, Co. of Stafford, England. Table hardware, such as knives, forks, spoons, etc., 11th July, 1888.
3221. EDWARD JAMES & SONS, of Sutton Road, Plymouth, Co. of Devon, England. Starch, 16th July, 1888.
3222. EDWARD JAMES & SONS, of Sutton Road, Plymouth, Co. of Devon, England. Starch, 16th July, 1888.
3223. JOHN DAVIS, of Detroit, Michigan, U. S. A. Baking Powder, 26th July, 1888.
3224. JOHN DAVIS, of Detroit, Michigan, U. S. A. Baking Powder, 26th July, 1888.
3225. MENDELSSOHN PIANO COMPANY, LIMITED, of Toronto, Ont. Pianos, Organs and other musical instruments, 30th July, 1888.
3226. H. BENTLEY & CO., of Lethbridge, Alberta, N. W. T. Cigars, 31st July, 1888.
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4337. BEWITCHING IZA. By Alexis Bouvier, (book). William Bryce, Toronto. 3rd July, 1888.
4338. THE DOMINION ILLUSTRATED. Number I. Weekly illustrated newspaper. G. E. Desbarats & Son, Montreal. 3rd July, 1888.
4339. PREMIÈRE PENSÉE. Valse, par Julia Gauthier. Julia Gauthier, Montreal, 3 Juillet, 1888.
4340. INCORPORATION OF JOINT STOCK COMPANIES, CANADA. W. E. Hodgins. (book). Carswell & Co., Toronto. 4th July, 1888.
4341. THE ONTARIO REPORTS, VOLUME XIV, 1888. The Law Society of Upper Canada, Toronto. 5th July, 1888.
4342. BEAUTIFUL JIM. By John Strange Winter, (book). The National Publishing Co., Toronto. 6th July, 1888.
4343. THE CANADIAN LAW TIMES. Edited by E. Douglas Armour, of Osgoode Hall, barrister-at-law. Volume VI. Carswell & Co., Toronto. 6th July, 1888.
4344. SIGNS OF CHARACTER: or, HOW TO READ CHARACTER AT SIGHT. By A. Wallace Mason, (book). Andrew H. Mason, Toronto. 10th July, 1888.
4345. MUSKOKA ILLUSTRATED. By G. Mercer Adam, (book). William Bryce, Toronto. 10th July, 1888.
4346. DIANA BARRINGTON. By Mrs. John Croker, (book). William Bryce, Toronto. 10th July, 1888.
4347. LOVELL'S MONTREAL DIRECTORY, 1888-89. John Lovell & Son, Montreal. 13th July, 1888.
4348. THE UNIVERSAL REDUCTOR. A series of Conversion Tables for the use of the Importers of and the Exporters to the United States and Canada, (book). Charles Hardy, Montreal. 13th July, 1888.
4349. SINCLAIR'S SCRIPT BUSYWORK, (chart). Samuel B. Sinclair, Ridgetown, Ont. 13th July, 1888.
4350. THE CANADIAN LAW TIMES. Edited by E. Douglas Armour, of Osgoode Hall, barrister-at-law. Volume VII. Carswell & Co., Toronto. 16th July, 1888.
4351. ARTISTIC TELEPHONE, (lithograph). John B. Grant, Toronto. 16th July, 1888.
4352. MR. MEESON'S WILL. By H. Rider Haggard, (book). Hunter, Ross & Co., Toronto. 16th July, 1888.
4353. BOOTLES' CHILDREN. By John Strange Winter, (book). The National Publishing Co., Toronto. 17th July, 1888.
4354. EXTRACT FROM TECHNICAL STUDIES FOR THE PIANOFORTE. By Louis Plaidy, Breitkopf & Hartel, Leipzig, Germany. 17th July, 1888.
4355. HISTOIRE DU DROIT CANADIEN. Par Edmond Lareau, avocat. Edmond Lareau, Montreal. 17th July, 1888.
4356. PETIT RESUMÉ DU COURS D'HYGIÈNE A L'USAGE DES ÉLÈVES DE TROISIÈME CLASSE. Socur Marie St. Cyrille, St. Colomb de Sillery, Que. 19 Juillet, 1888.
4357. CATECHISME D'HYGIÈNE A L'USAGE DES ÉCOLES DE JEUNES FILLES. Socur Marie St. Cyrille, St. Colomb de Sillery, Que. 19 Juillet, 1888.
4358. THE DOMINION ILLUSTRATED. Number II. Weekly Illustrated Newspaper. G. E. Desbarats & Son, Montreal. 20th July, 1888.
4359. ROBIN HOOD LANCERS. By Mrs. Henry Brent. A. & S. Nordheimer, Toronto. 21st July, 1888.
4360. ERIE GAVOTTE. By Miss Una Slaght. A. & S. Nordheimer, Toronto. 21st July, 1888.
4361. LE ROMAN DE SUZANNE. Par H. H. Godfrey, (musical composition). A. & S. Nordheimer, Toronto. 21st July, 1888.
4362. THE IRONMASTER: or, LOVE AND PRIDE. By Georges Ohnet, (book). Wm. Bryce, Toronto. 23rd July, 1888.
4363. A WILY WIDOW. By Alexis Bouvier, (book). William Bryce, Toronto. 23rd July, 1888.

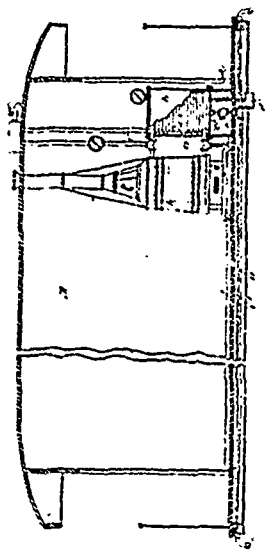
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ILLUSTRATIONS.

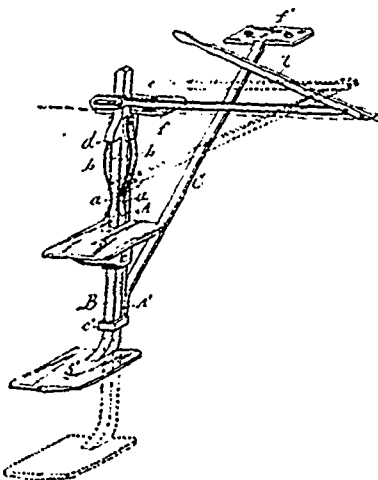
Vol. XVI.

JULY, 1888.

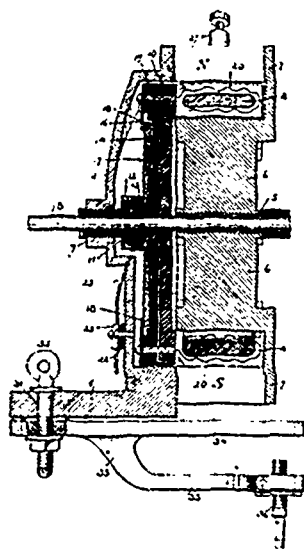
No. 7.



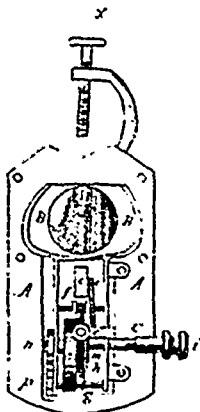
29414 Walworth's Car Heating Apparatus.



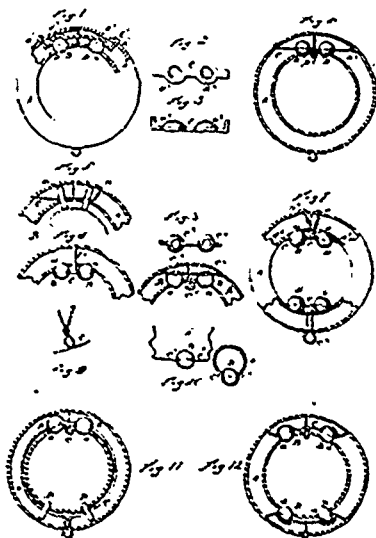
29415 Johnson's Carriage Step.



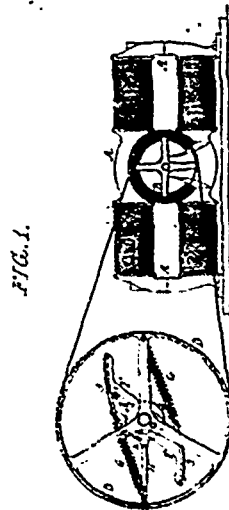
29416 Card's Electric Motor.



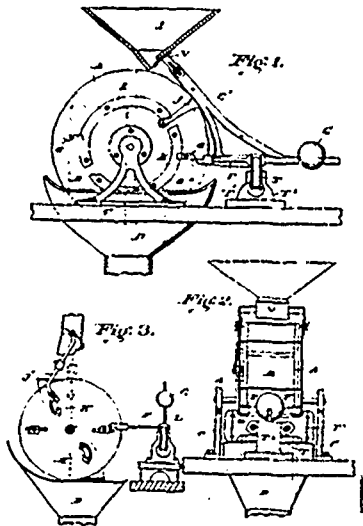
29417 McIntosh's Burglar Alarm.



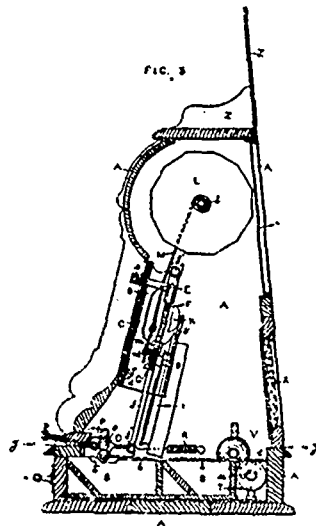
29418 Wood's Curtain Carrier.



29419 Higham's Regulation of Dynamo-Electric Machines.



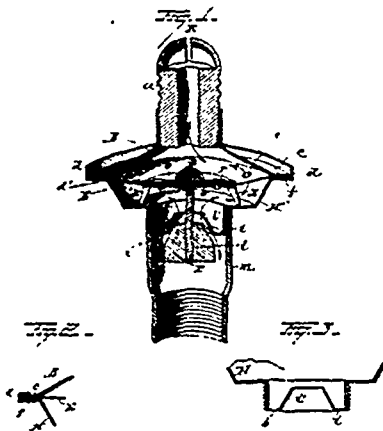
29420 Springers & Kent's Automatic Grain Meter.



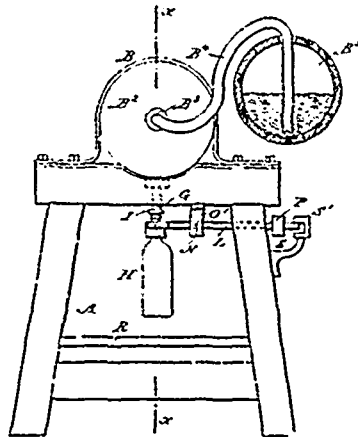
29421 Farrow & Carson's Money Till.



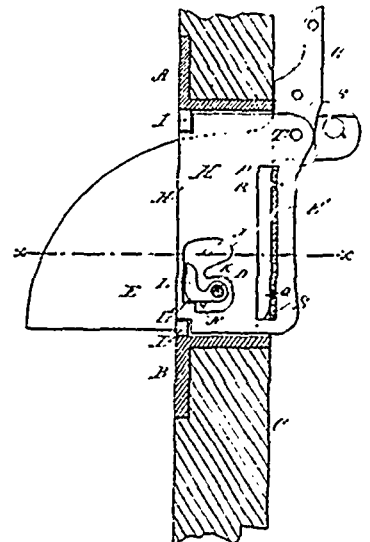
29422 Russell's Metallic Leaf and Flower.



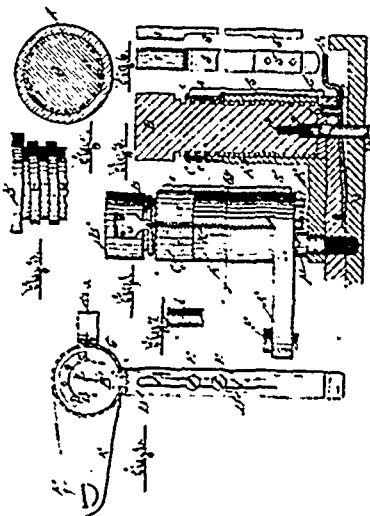
29423 Jackson's Gas Burner.



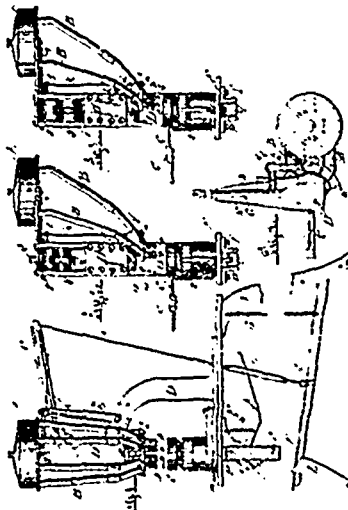
29424 Comstock's Bottle Filler.



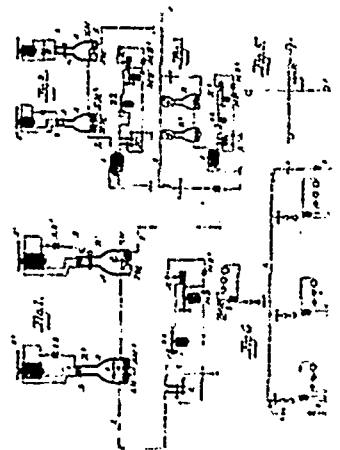
29425 G-dwin's Seal Lock.



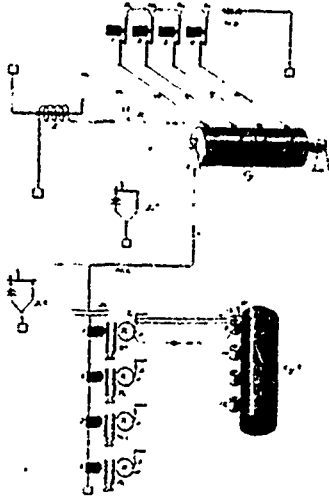
29426 Unbehend's Rivetting Machine.



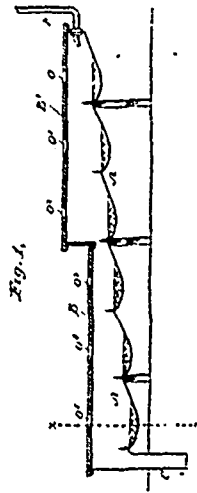
29427 Thompson & Unbehend's Rivetting Machine.



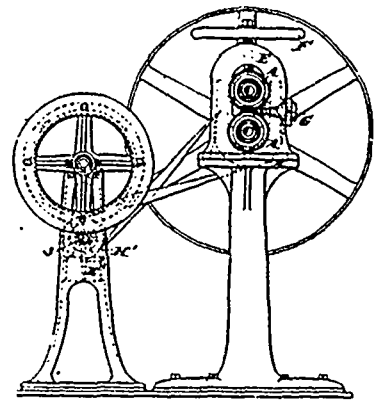
29428 Selden's Multiple Telegraph System.



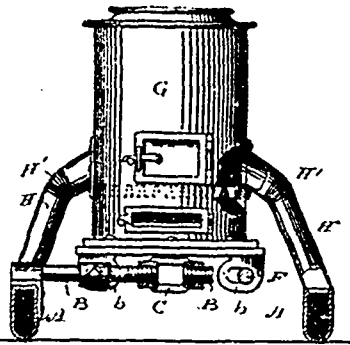
29429 Selden's Automatic and Autographic Telegraphy.



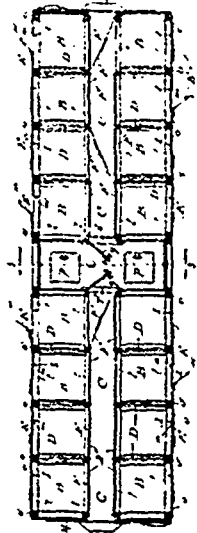
29430 Parson's Trough for Water Closets.



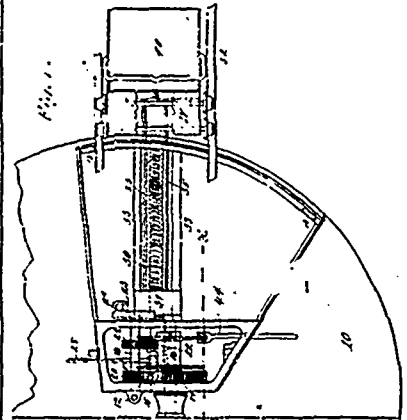
29431 Phillip's Machine for Barbing and Winding Wire.



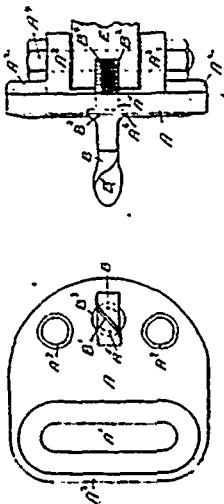
29432 Arpin's Device for Making Ice Roads.



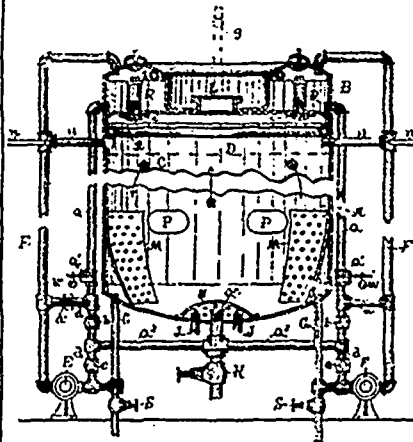
29433 Jenkins' Live Poultry Car.



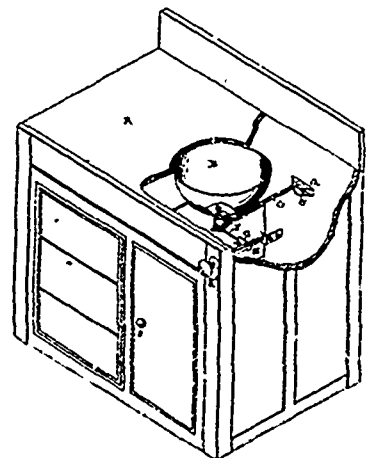
29434 Meyers' Steam Shovel.



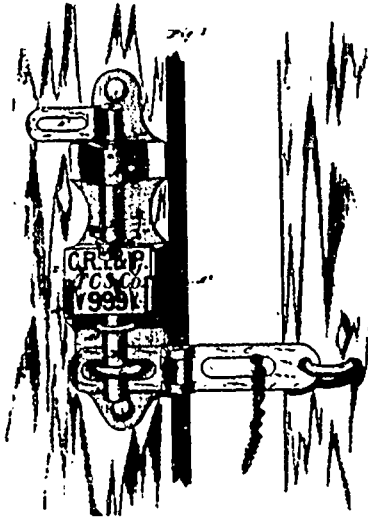
29435 Brown's Railway Coupling and Buffer.



29436 Chambers' Apparatus for Making Paper Stock.



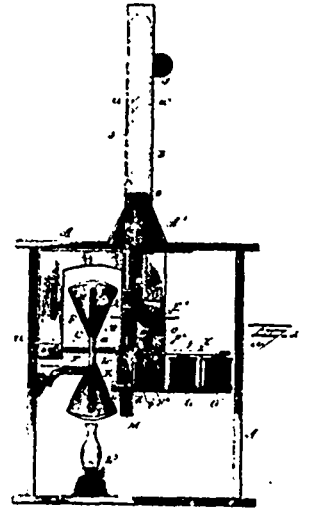
29437 Bond's Wash Stand Bowl.



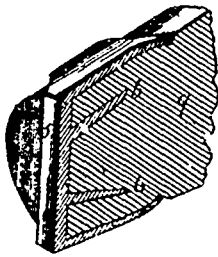
29438 Davis' Seal Lock.



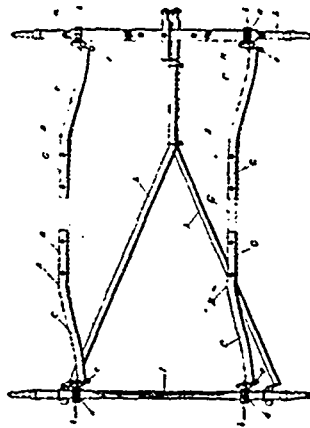
29439 McCloud's Machine for Reducing Railway Rails.



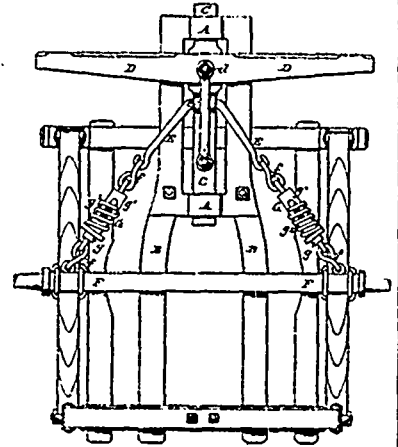
29440 Stitzel & Weinedel's Semaphore Signalling Apparatus.



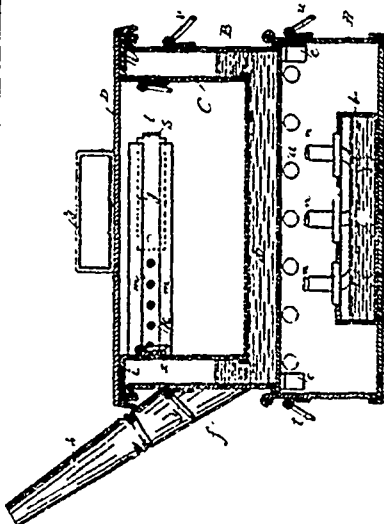
29441 Clark's Trace Fastening.



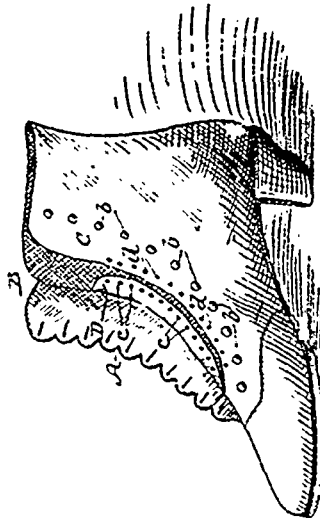
29442 Armstrong's Vehicle Gear.



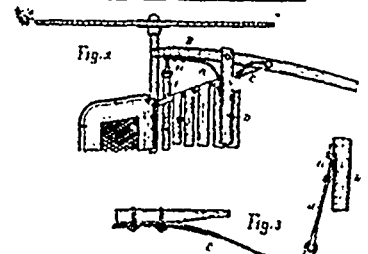
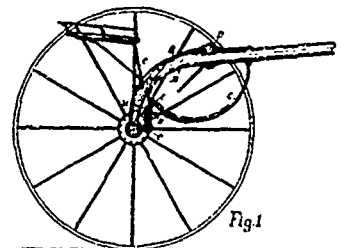
29443 Unsoeld's Draft Attachment for Waggons.



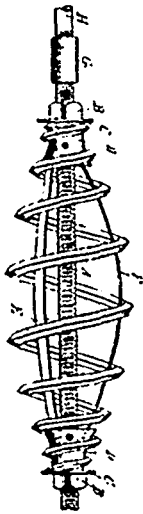
29444 Scanton's Poulitce Pan.



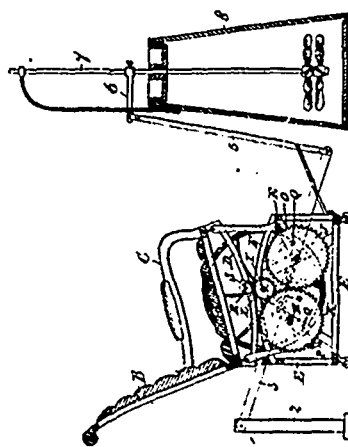
29445 Ritchie's Button Boot.



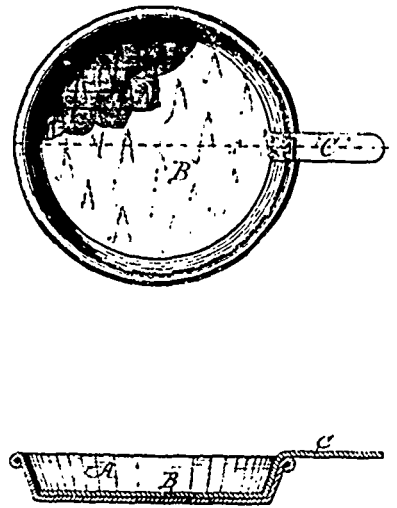
29446 Phillips & Staley's Two Wheeled Vehicle.



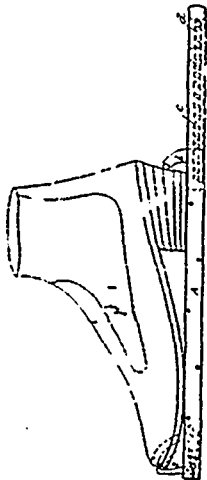
29447 Thomas' Flue Cleaner.



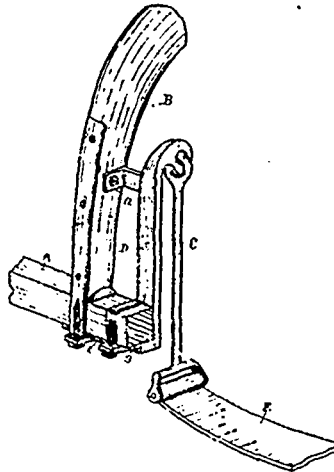
29448 Jack's Churn Motor.



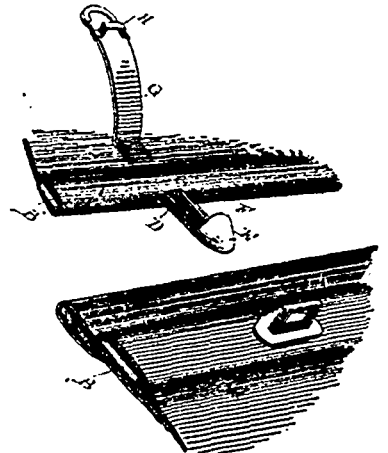
29449 Greeno & Hendryx's Baking Pan.



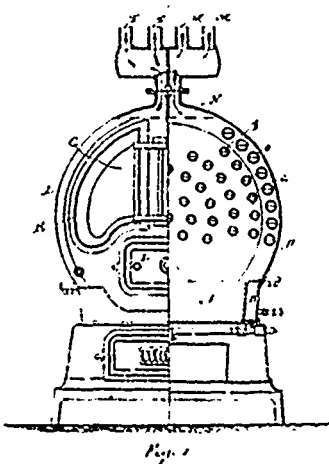
29450 Watta's Apparatus for Treeing, etc., Boots and Shoes.



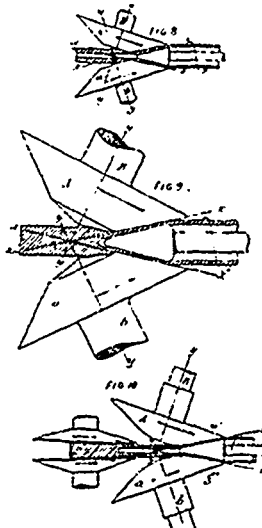
29451 Rix's Two-Wheel Vehicle.



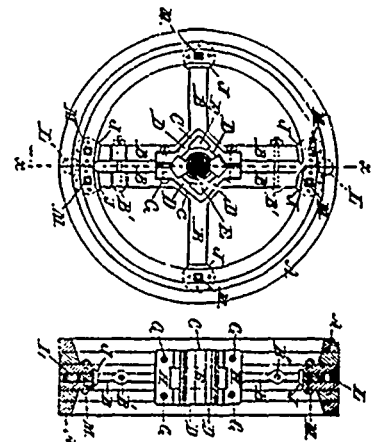
29452 Davenport's Corset Fastener.



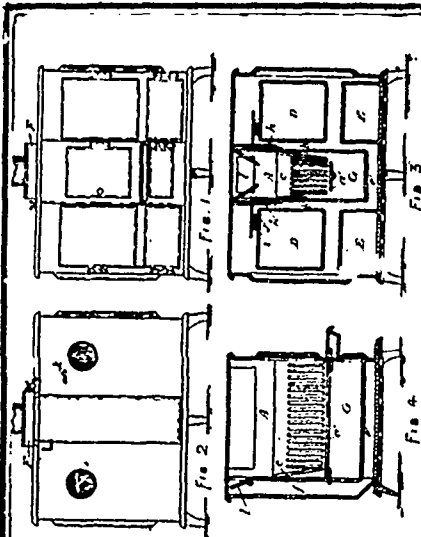
29453 Manny's Hot Water Boiler.



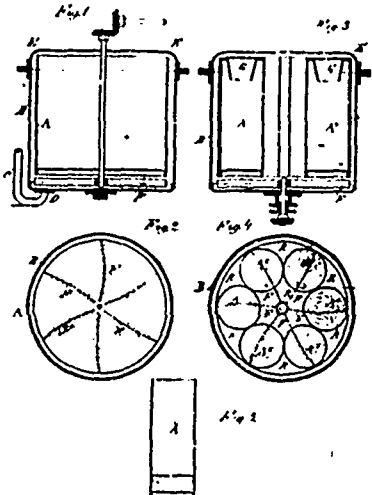
29454 Mannesman's Art of Enlarging Metallic Tubes.



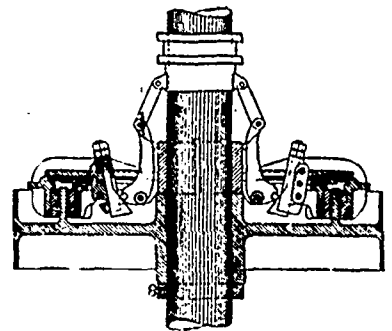
29455 Brockett & Eames' Sectional Pulley.



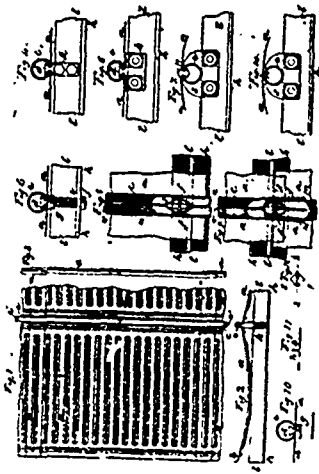
29457 Thibault's Cooking Stove.



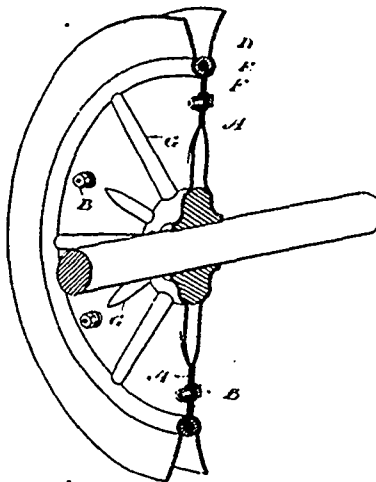
29480 Schmidt's Machine for Washing, Bleaching and Dyeing Textile Materials.



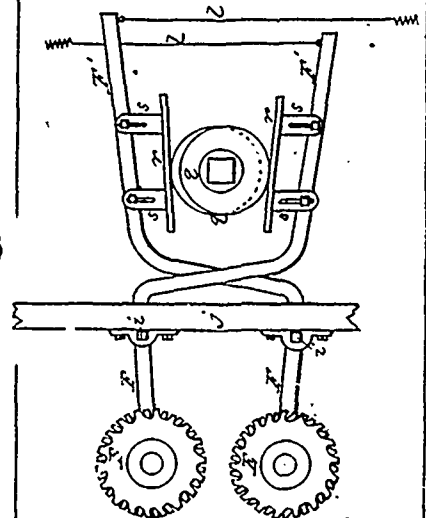
29461 Crowell's Friction Clutch.



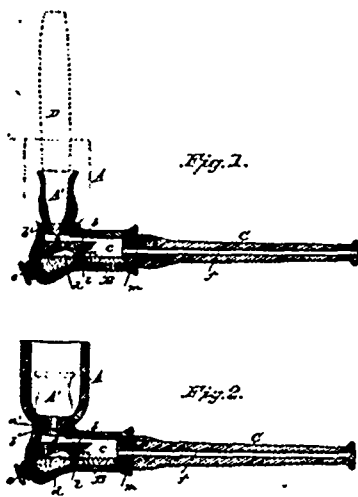
29462 Orr & Brown's Sheet Metal Structure, etc.



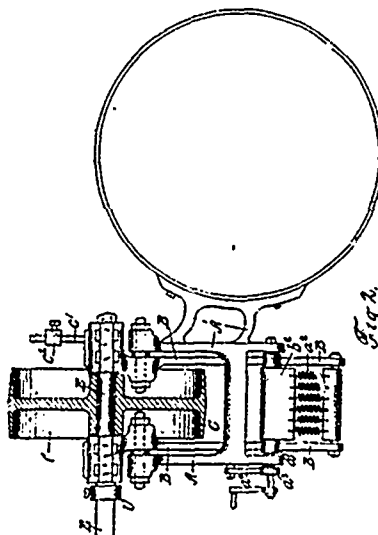
29463 Avis's Grooved Pulley.



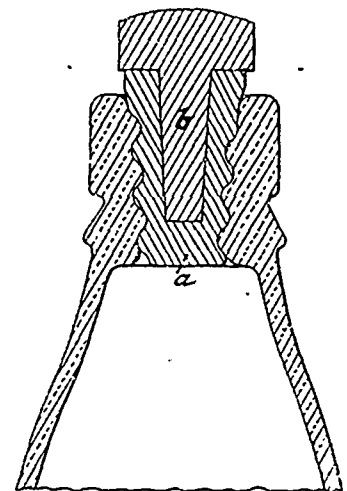
29464 Penfield's Machine for Jointing and Planing Staves.



29465 Roesling's Tobacco Pipe.

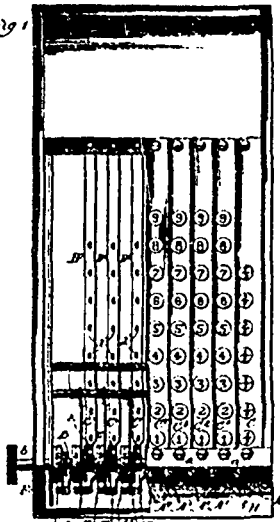


29466 Kleinliver's Mechanism for Driving Machinery.

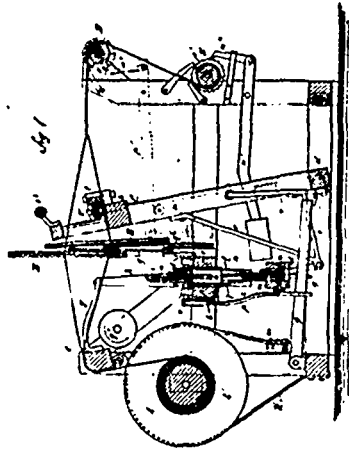


29467 Davidson's Stopper for Bottles, etc.

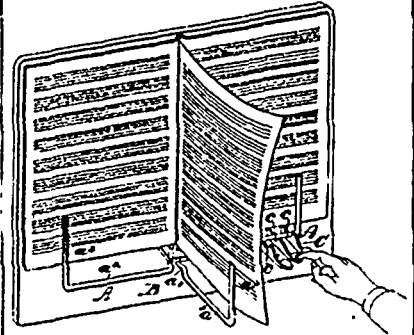
Fig. 1



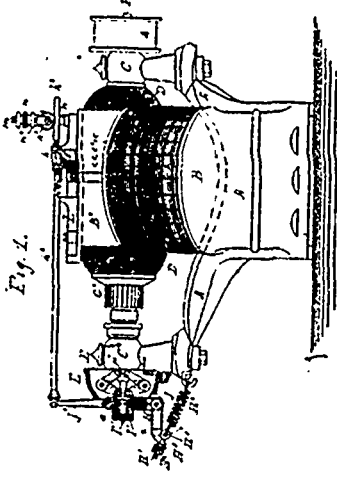
29468 Felt's Adding Machine.



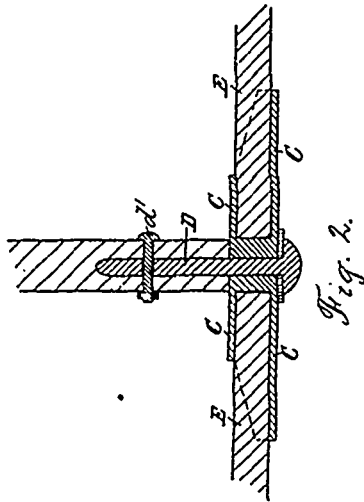
29469 Newcomb's Hand Loom.



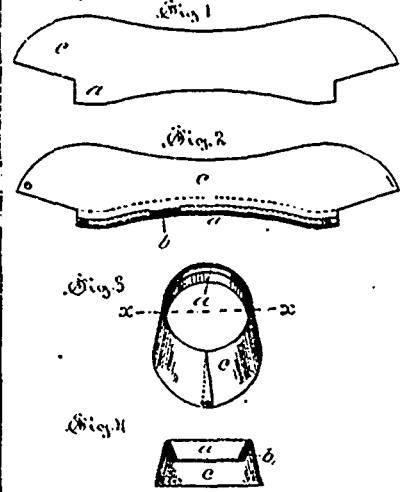
29470 Miller's Music Turner.



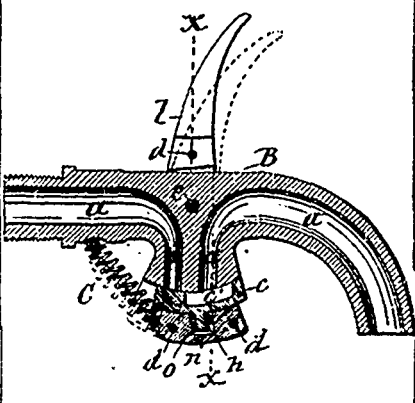
29471 Baxter's Electric Motor.



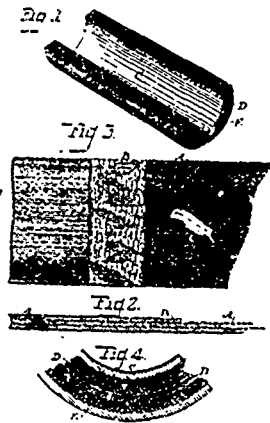
29472 Pilkay's Clothes Drier.



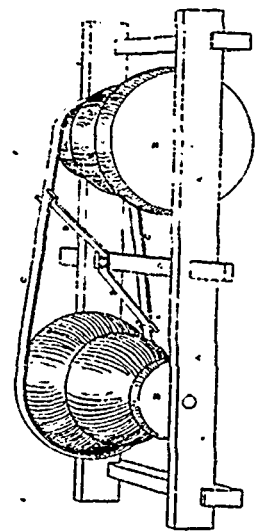
29473 Langdon's Garment Protector.



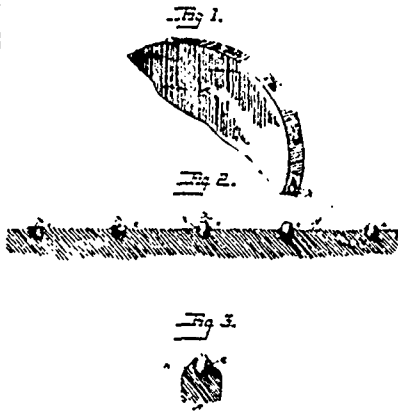
29474 Scoville's Faucet.



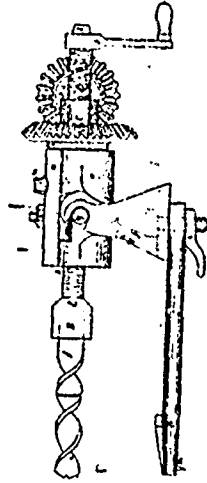
29475 Wood's Steam Hose.



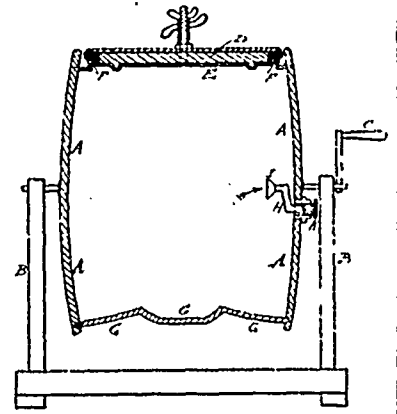
29476 Smallwood's Cone Pulley



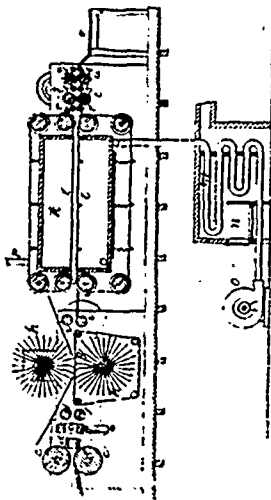
29477 Maloy's Mounting Diamonds on Saws.



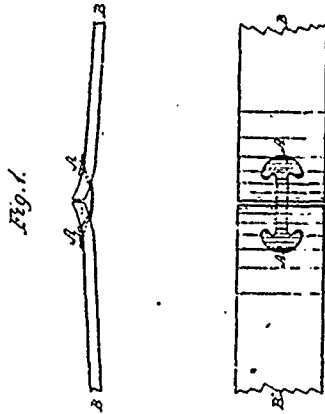
29478 Johnson's Drilling Machine.



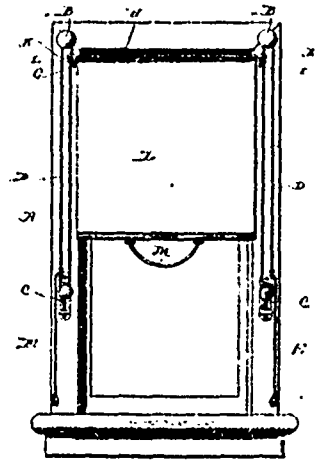
29479 Noble's Revolving Churn.



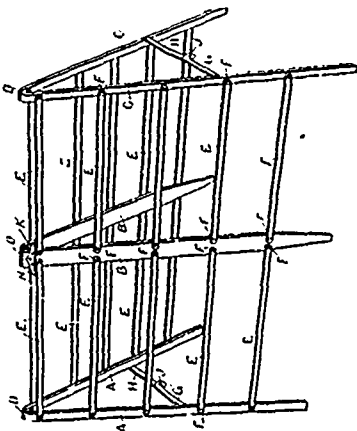
29480 Kauffman & Austin's Treatment of Ramie, etc.



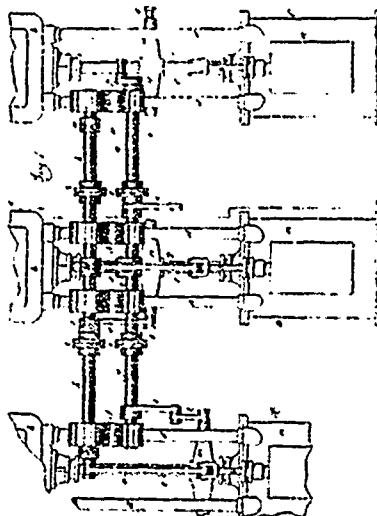
29481 Cuthbert's Belt Fastener.



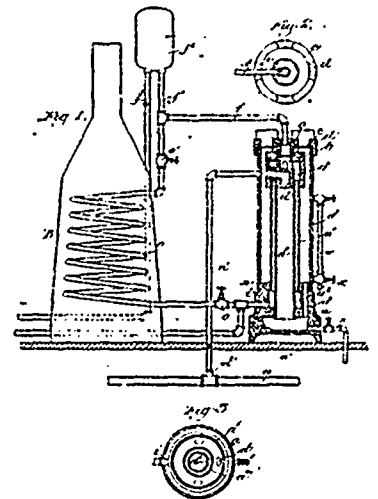
29482 Huffer's Window Shade.



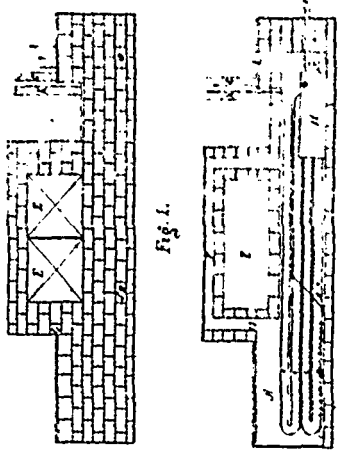
29463 Fletcher's Clothes Horse.



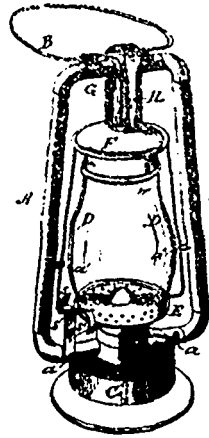
29484 Worthington's Direct Acting Engine.



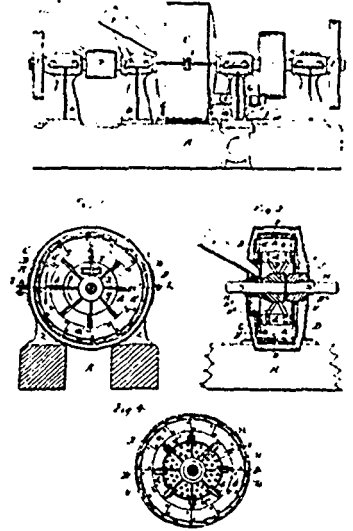
29485 Sewall's Car Heating Apparatus.



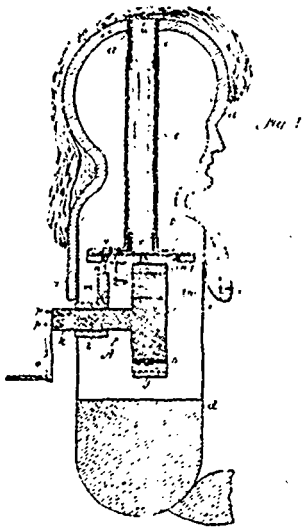
29486 Scribner's Cooking Range.



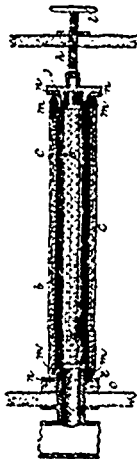
29487 Drew & Grant's Lantern.



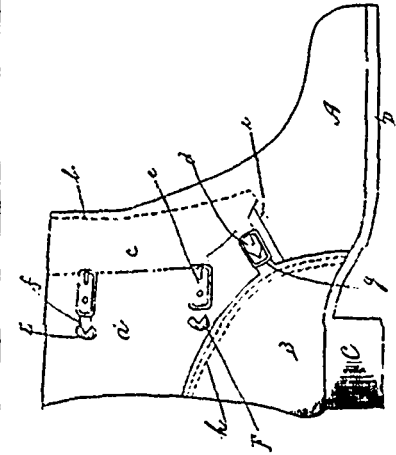
29488 Scaris' Machine for Pulverizing Rock.



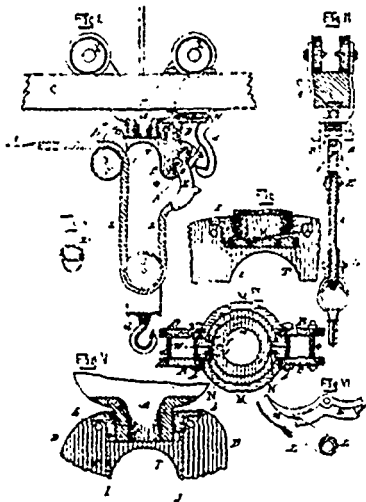
29489 Jacque's Doll and Phonograph.



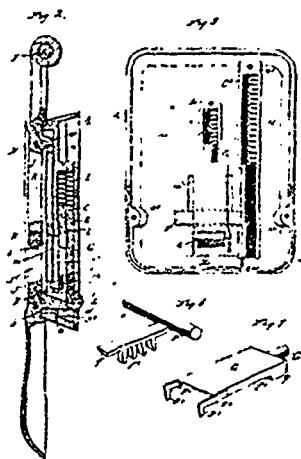
29490 Cooper, Clayton & Holdroyd's Filtering Apparatus.



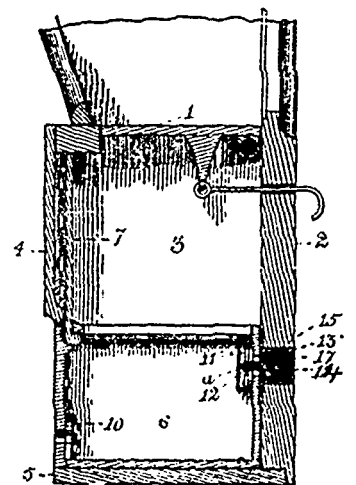
29491 Oulmette's Shoe Vamp.



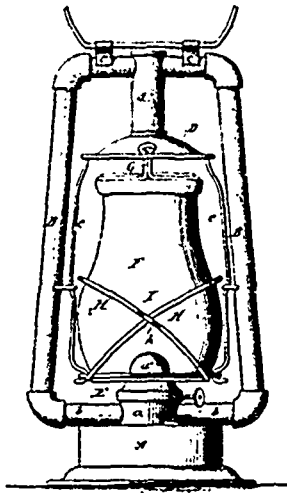
29492 Burnham & Miller's Hay Elevator.



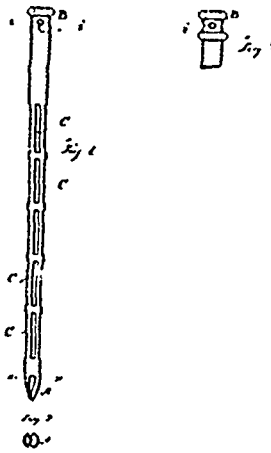
29494 Brown's Seal Lock.



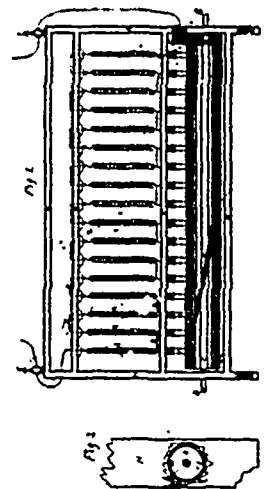
29495 Claspy's Attachment for Fare Boxes.



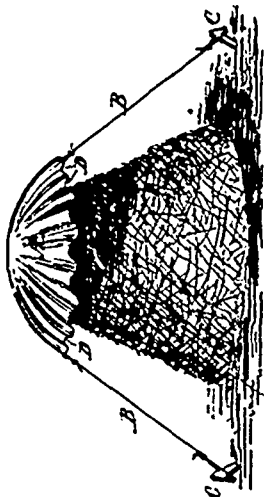
29496 Betts' Lantern Guard.



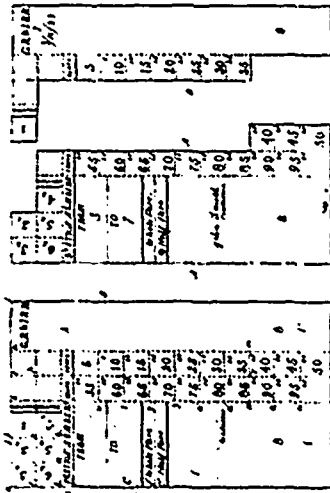
29497 Balley's Instrument for Curing Meats.



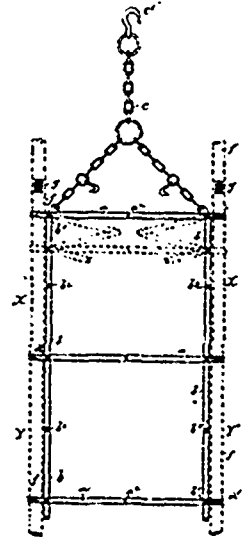
28498 Norton's Machine for Regulating Electricity.



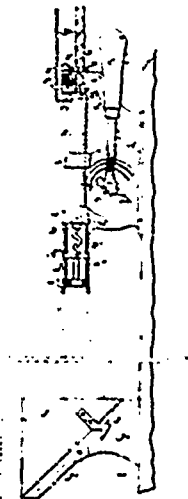
29499 Symmes' Hay and Grain Cock Weather Shield.



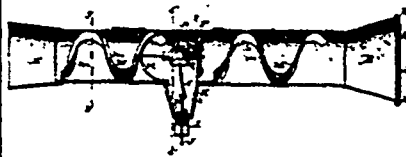
29500 Mctheany's Railway Ticket.



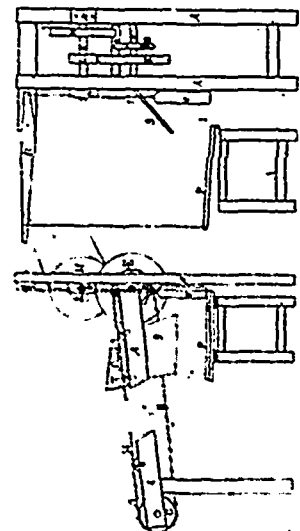
28501 Ihne's Ladder.



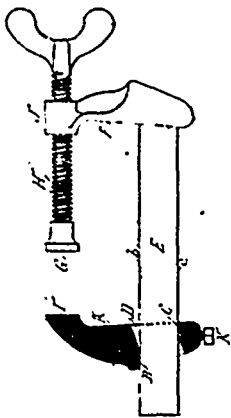
29502 Hinphy's Apparatus for Drawing Corks.



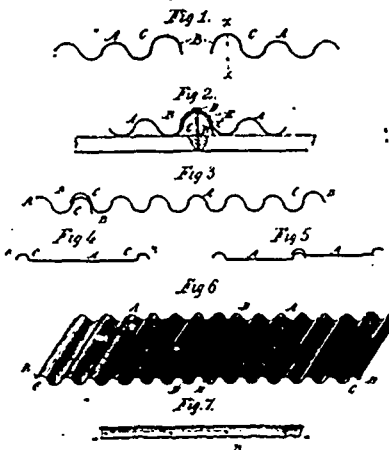
29503 Gastlin's Water Power



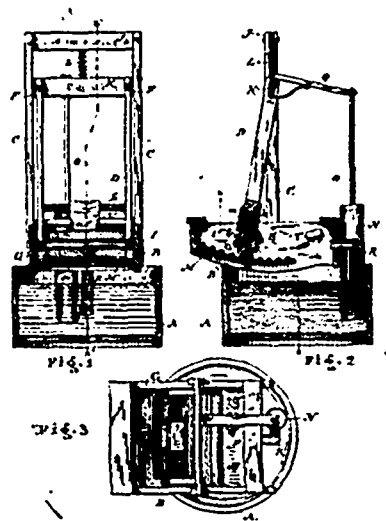
29504 Humpidge's Bolt or Material Dresser.



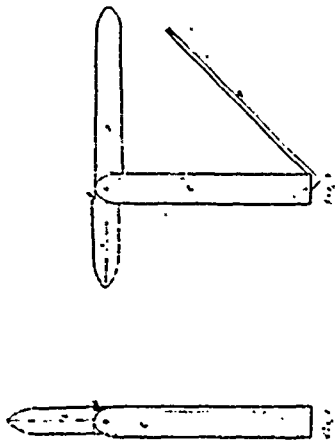
29505 Goudron's Cramping Frame.



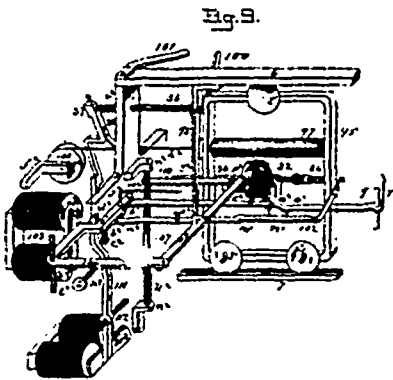
29506 Battelle's Joint for Sheet Metal.



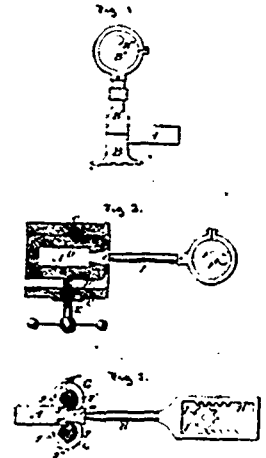
29507 Harding's Washing Machine.



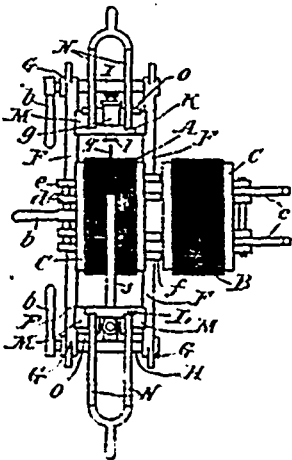
29508 Daine's Combination Knives



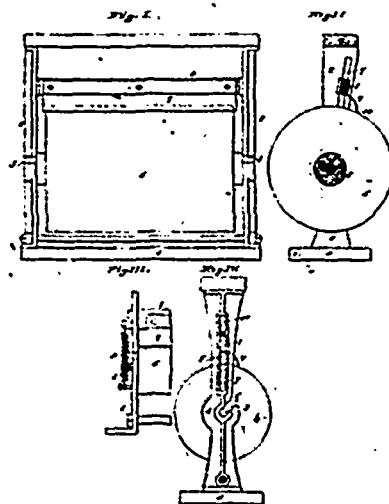
29510 Essick's Electric Printing Telegraph.



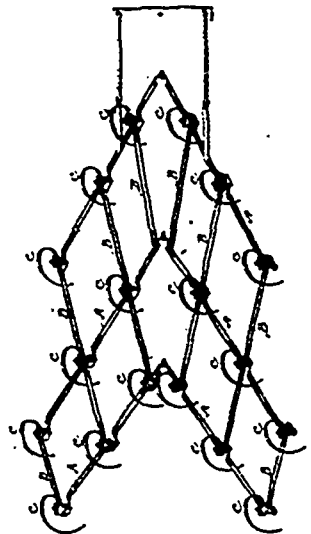
29511 Lien's Machinery for Manufacturing Spades, etc.



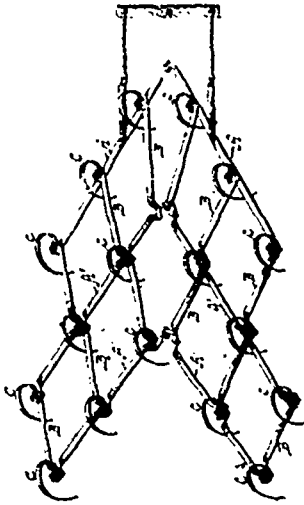
29512 Howard's Apparatus for Manufacturing Hollow-Ware from Pulp.



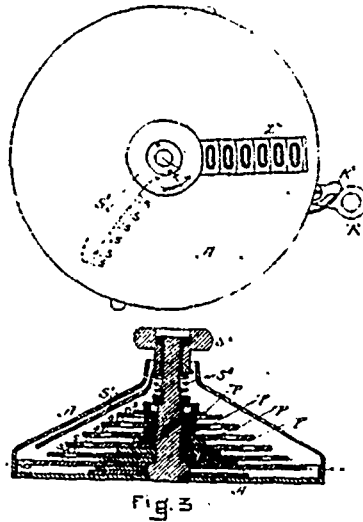
29513 Drosten's Paper Cutter



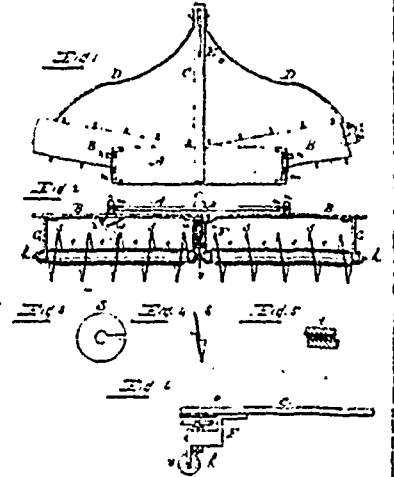
29514 Stevens' Harrow



2951c Stevens' Harrow.



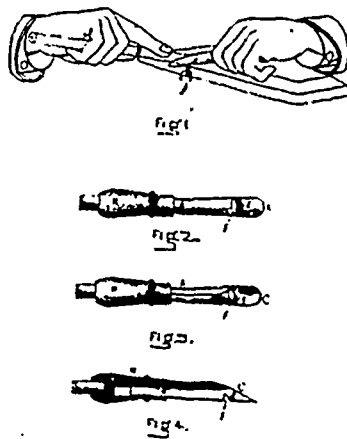
29516 Berrenburg's Recording Device.



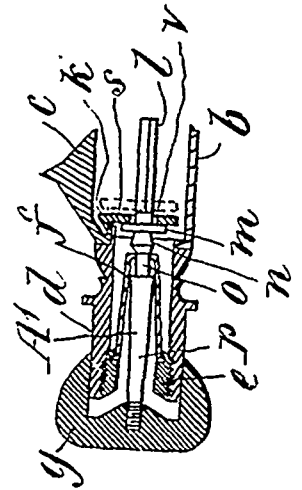
22518 Boyer's Disk Harrow.



29519 Hall's Mug, Cup, etc.



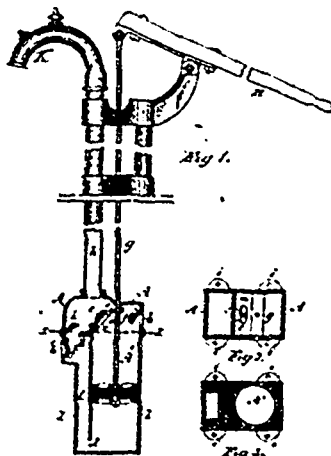
29520 Edgerton's Pencil Sharpener, etc.



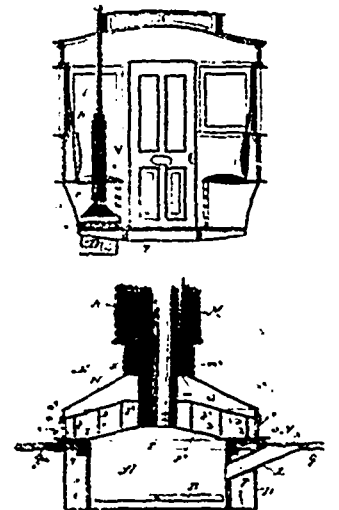
29521 Duplain's Pendant Set for Watches.



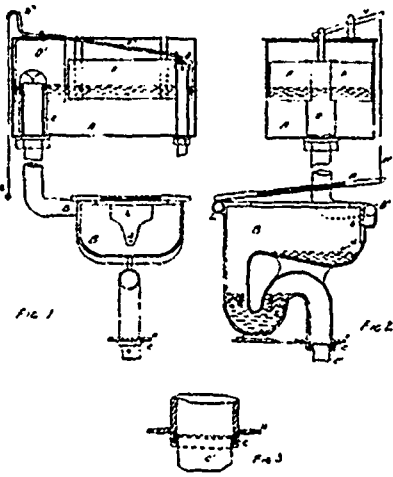
29527 Mitchell's Blackboard and Writing Desk.



29523 Walley's Force Pump.



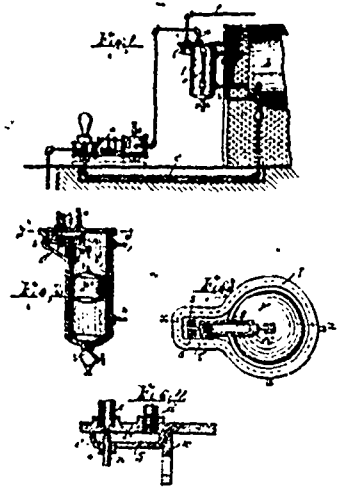
29525 Converse's Air Heating Device for Cars, etc.



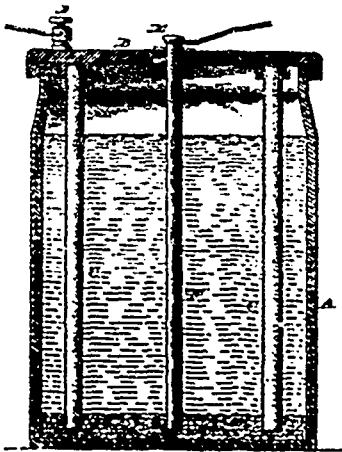
29526 Keith's Water Closet Apparatus.



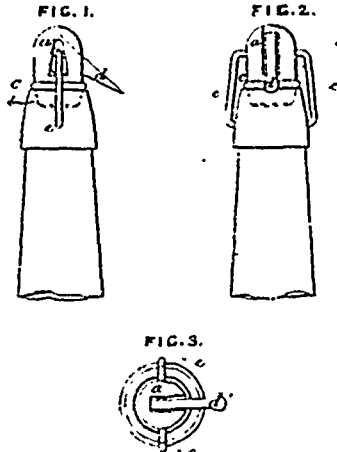
29527 Warner's Fire Ladder.



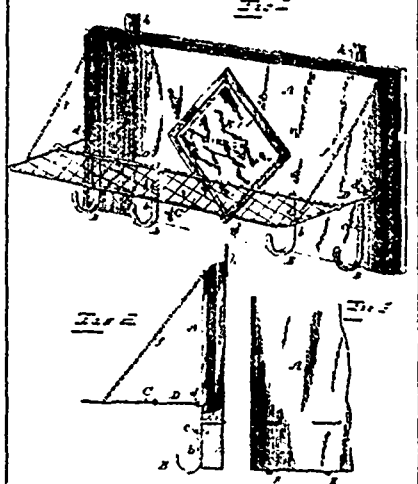
29528 Herrick's Feed Water Regulator.



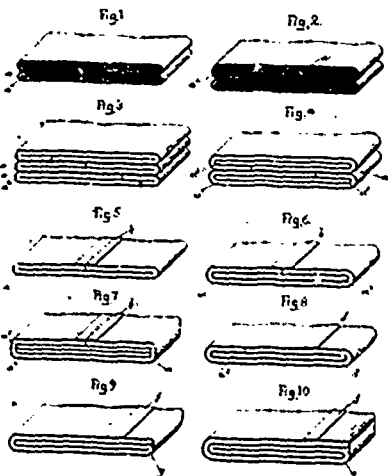
29529 Whittier's Galvanic Battery.



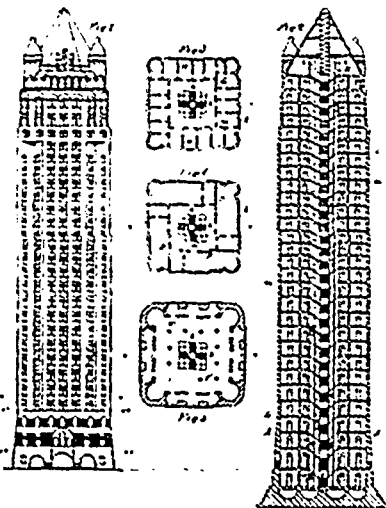
29530 Sinnatt's Stopper for Bottles, etc.



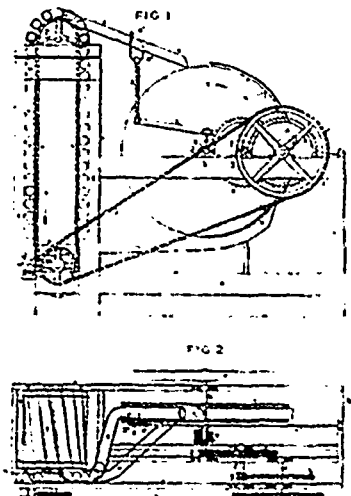
29531 McArthur's Coat and Hat Rack.



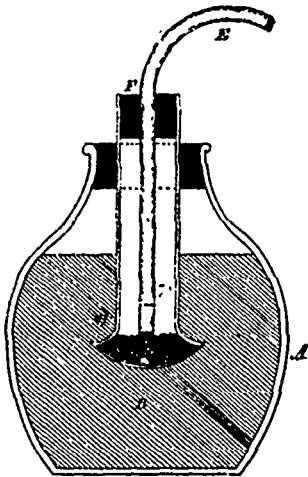
29532 Forsyth's Bolting.



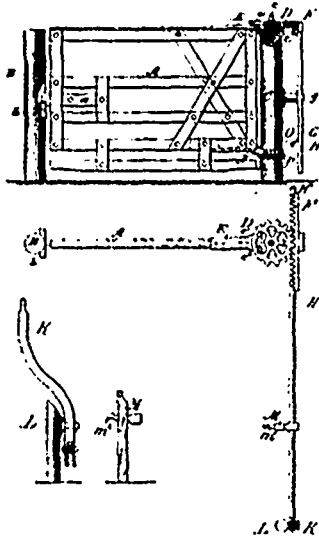
29533 Buffington's Iron Building Construction.



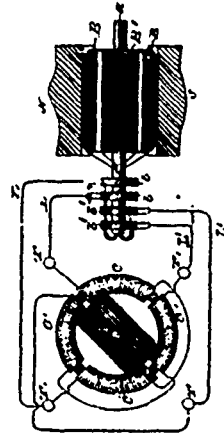
29534 Couchemann's Motive Power.



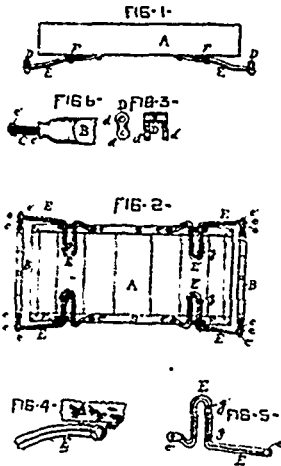
29535 Davis' Fire-Extinguisher.



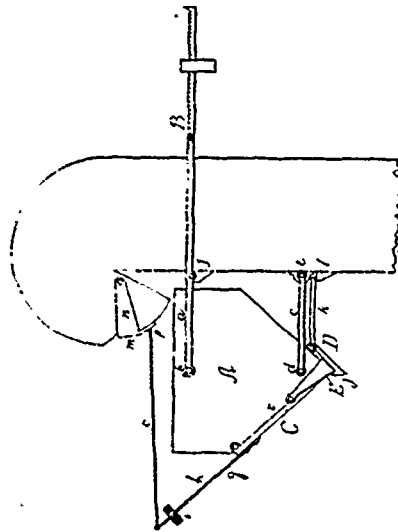
29536 Sherwin's Farm Gate.



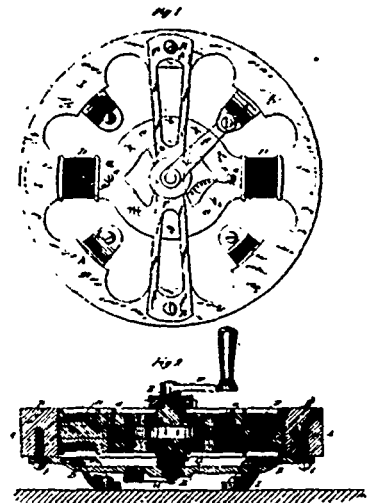
29537 Tesla's Electrical Transmission of Power.



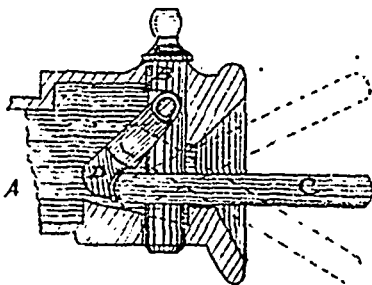
29538 Harris' Vehicle Spring.



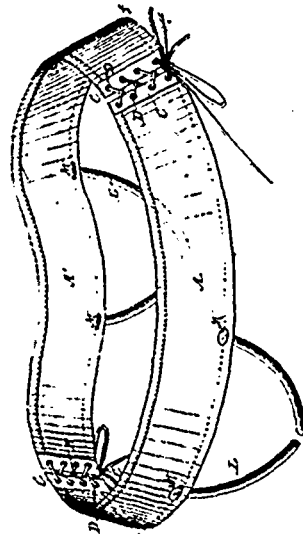
29539 Henry's Grain Weigher.



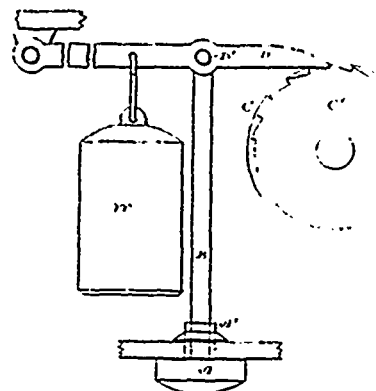
29540 Gillett's Magneto-Electric Generator.



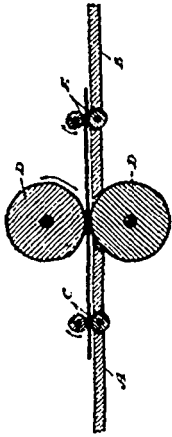
29541 Blocher's Car-Coupler.



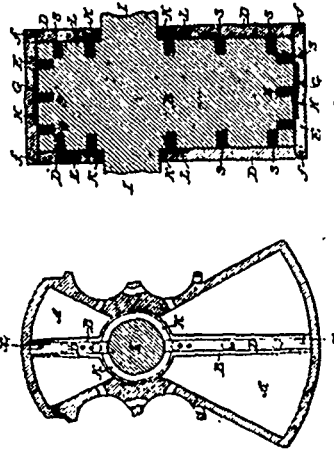
29542 Robinson's Catamential Band



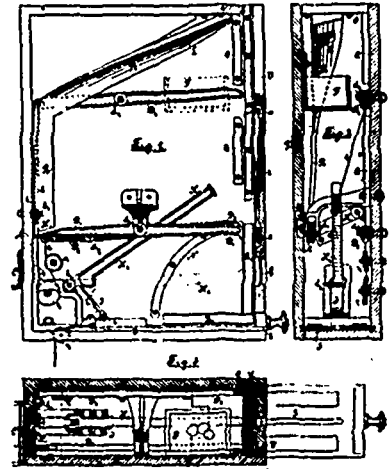
29543 Shaffer's Apparatus for Applying the Expansive Power of Heat.



29544 Everall's Manufacture of Hosiery.



29545 Holmgren's Metallic Packing.



29546 Mehlhardt's Apparatus for the Changing of Books

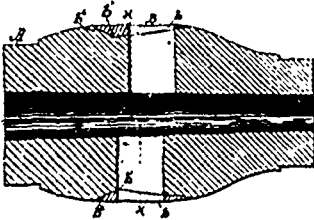
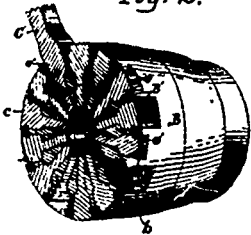
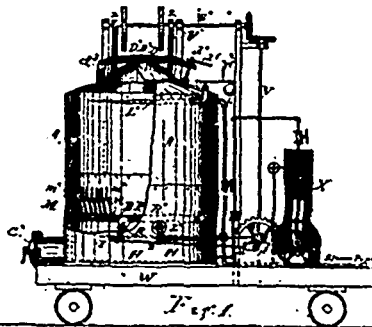


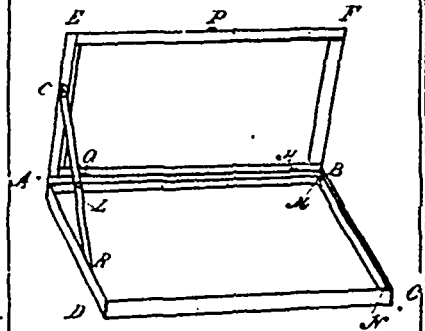
Fig. 2.



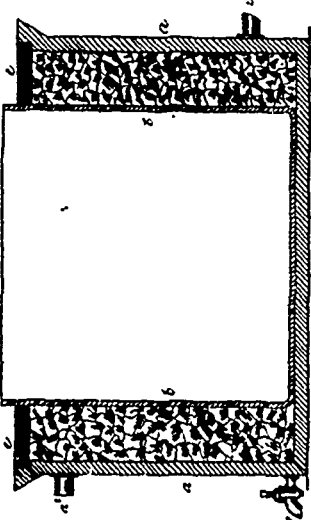
29547 True's Vehicle Wheel.



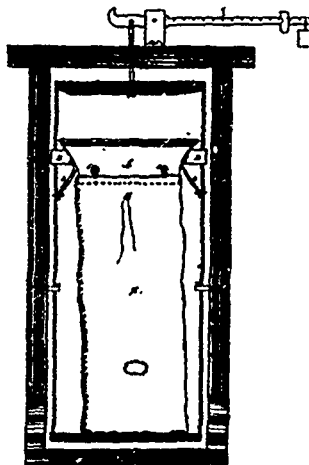
29548 Belmor's Apparatus for Reducing Bituminous Rock, etc.



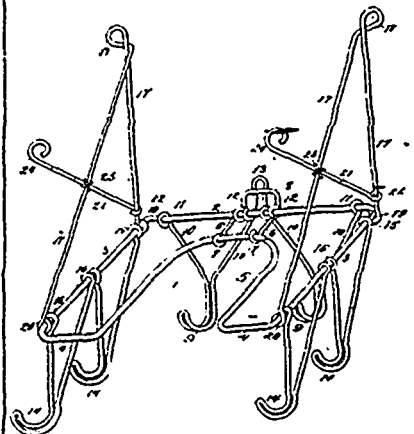
29549 McLellan's Box Cover and Show Case.



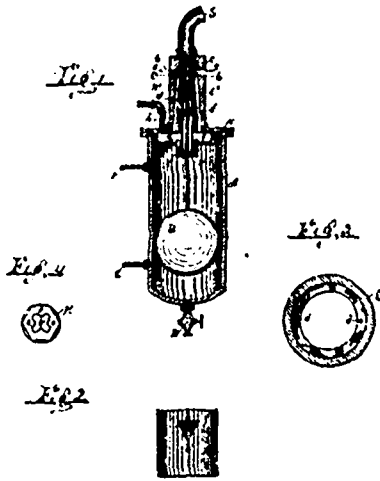
29550 Upward & Fridham's Galvanic Battery etc.



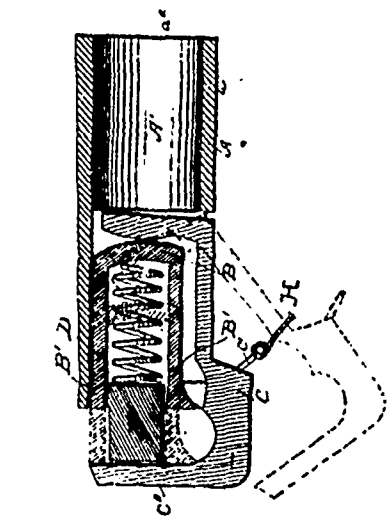
29551 Abercrombie & Marshall's Bag Weighing Scales.



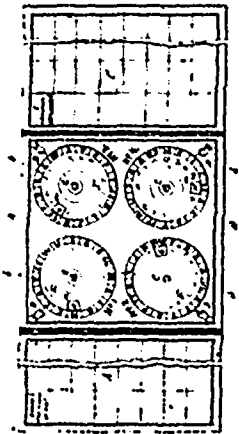
29552 Tolman's Folding Hat and Coat Rack.



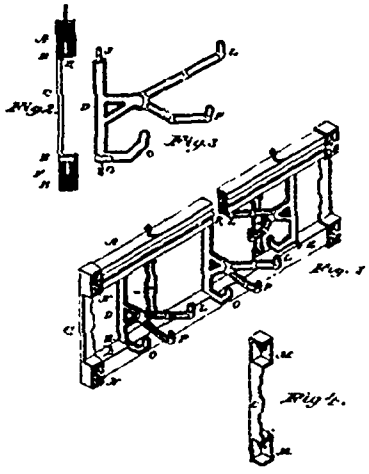
29553 Herrick's Food Water Regulator.



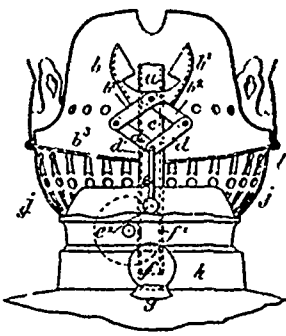
29554 Parker's Horse Detacher.



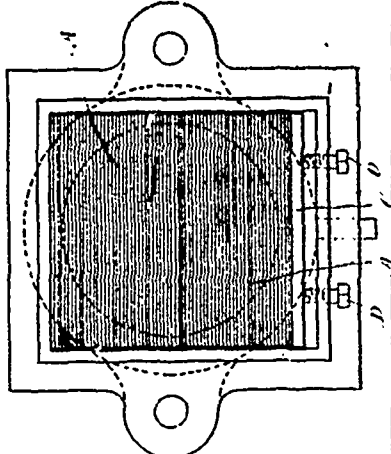
29555 Dunn's Game.



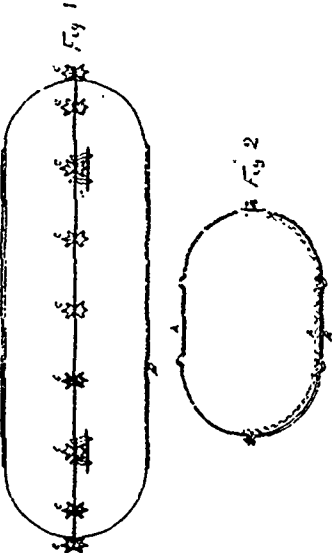
29556 Danner's Clothes Rack.



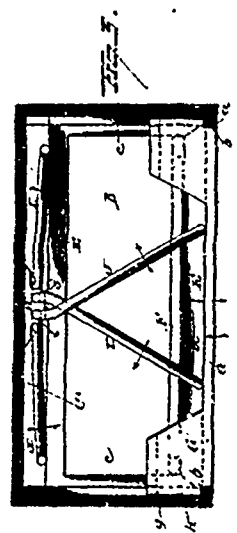
29560 Mainwaring's Safety Lamp.



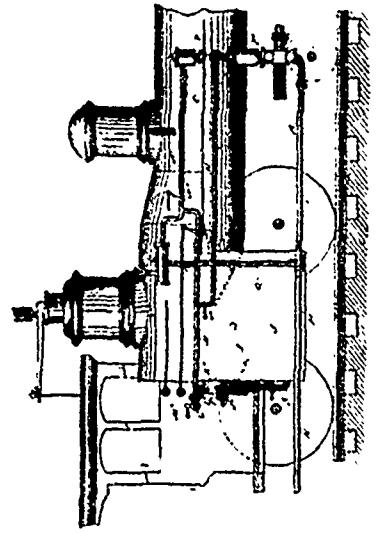
29561 Pond's Machine for Manufacturing Wool Pulp, etc



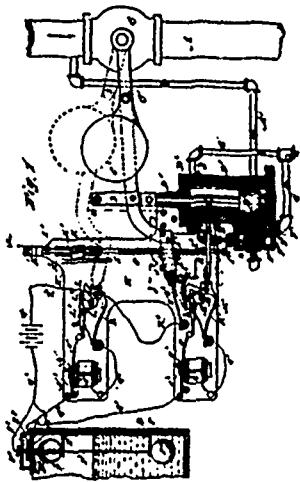
29562 Dearman's Burial Casket.



29563 Thompson's Fire-Escape.



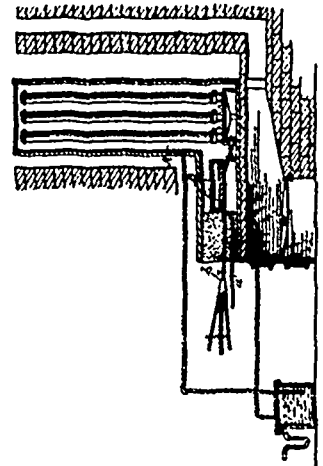
29564 Hullings' Locomotive Fire-Box.



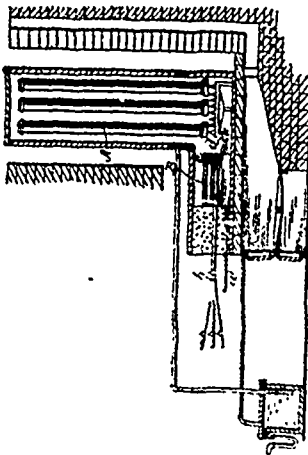
29565 Nen's Electric Feed Controller.



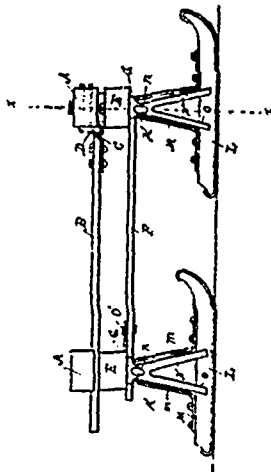
29566 Coté's Pipe Coupling.



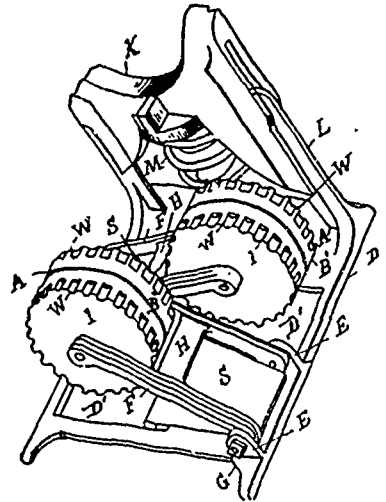
29567 Gesner's Improvements in Treating Metals.



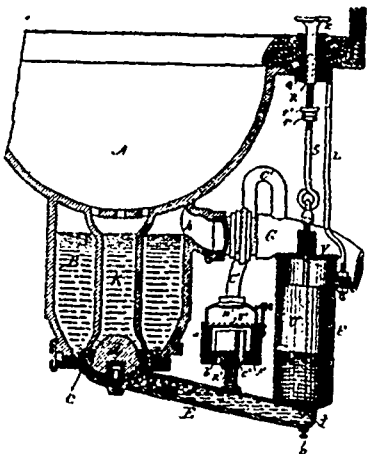
29568 Gesner's Apparatus for Oxidizing the Surface of Metals.



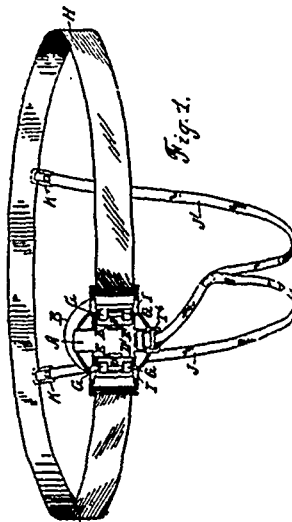
29569 Shourda's Bob Sleigh.



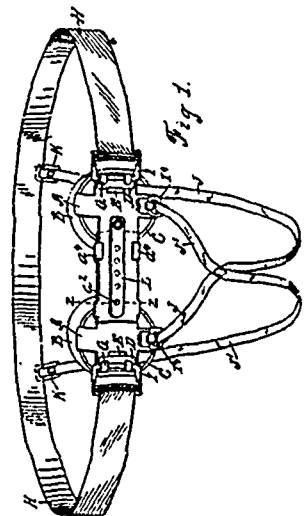
29570 Stever's Car Axle Lubricator.



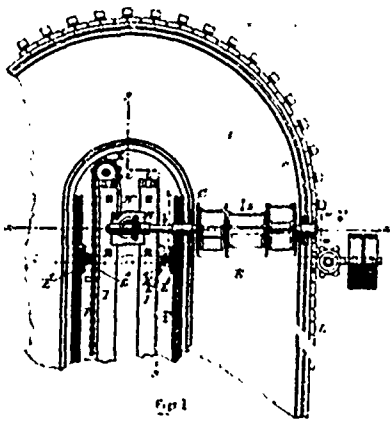
29571 McClellan's Air Inlet and Seal for Waste Pipes, etc.



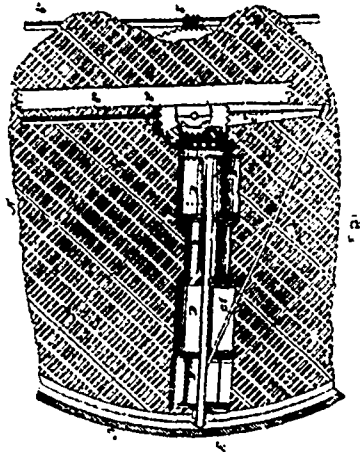
29572 Payne's Truss



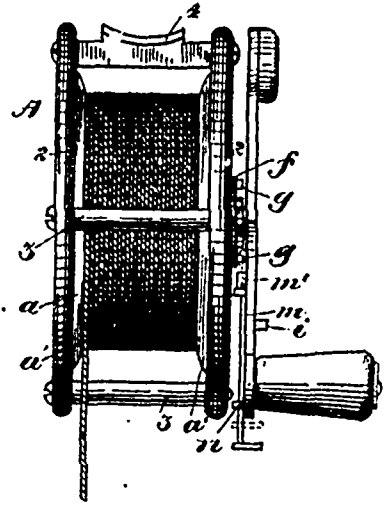
29573 Payne's Truss.



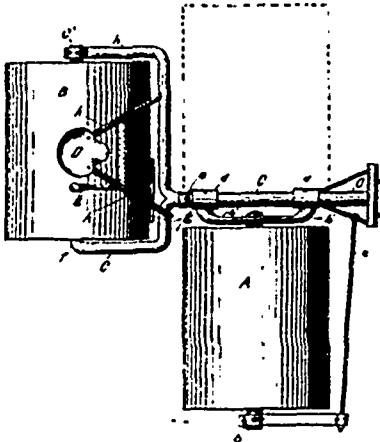
29574 Free & Barber's Malt Machine.



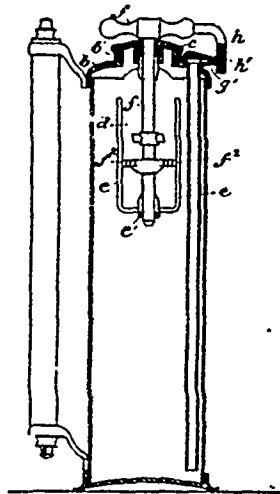
29575 Barber & Soar's Malt Growing and Drying Apparatus.



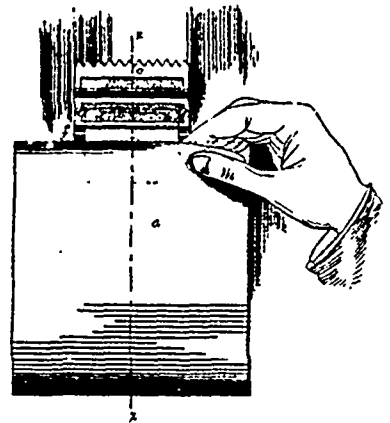
29576 Bradford's Reel for Fishing Rods.



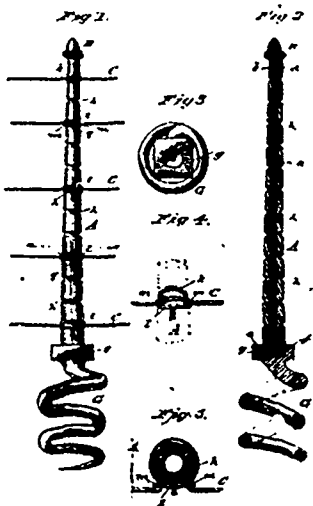
29577 Foosse's Land Roller



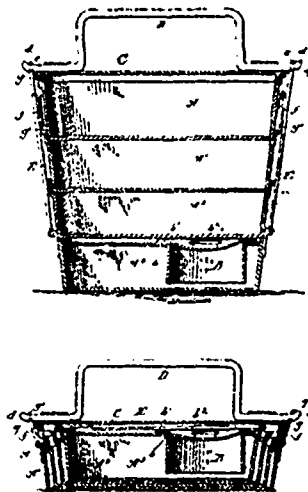
29578 Mitchell's Fire-Extinguisher.



29579 Wheeler's Holder for Paper.



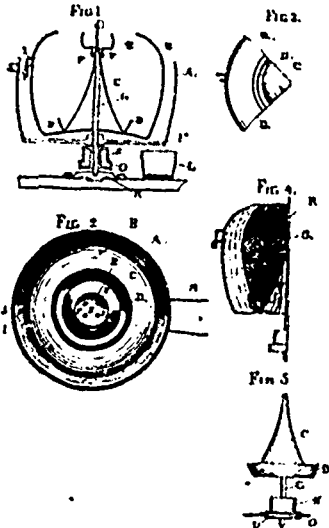
29580 Gullie's Metallic Fence.



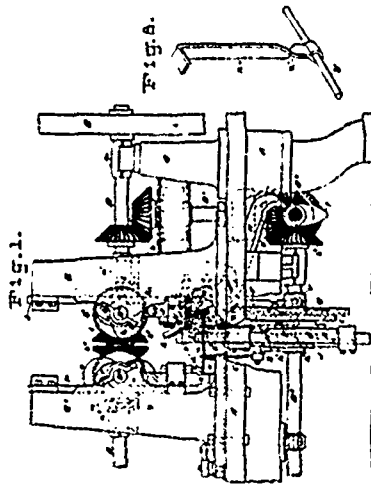
29581 Ethie's Dinner Pail.



29582 Kimball's Fence.



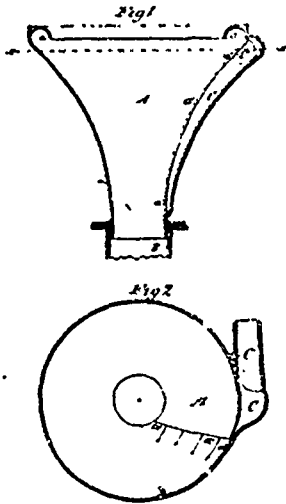
29583 Eisenbach & Adler's Centrifugal Machine for Starch, etc.



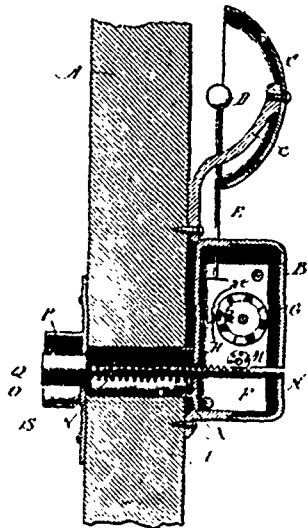
29584 Russell's Machine for Making Building Anchors.



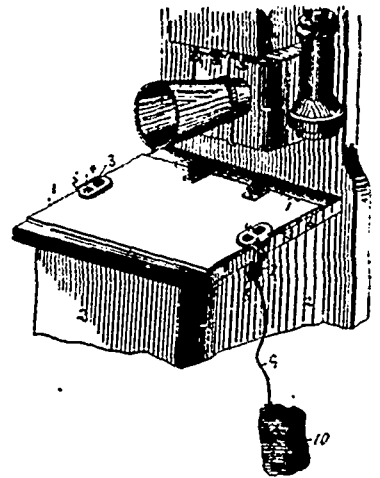
29585 Land's Operative Dentistry.



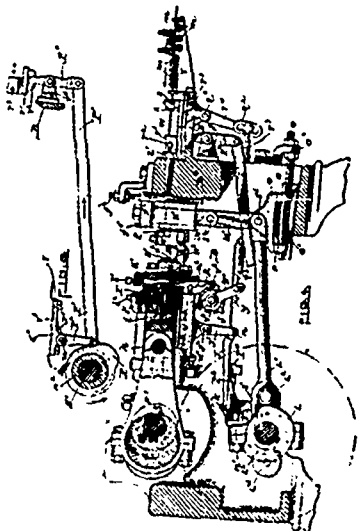
29588 Ivers' Water Closet Hopper, etc.



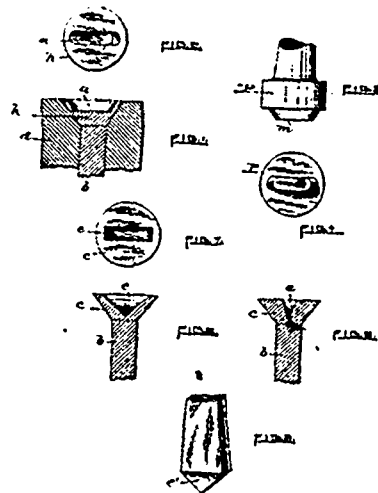
29587 Sanderson's Door Bell and Alarm.



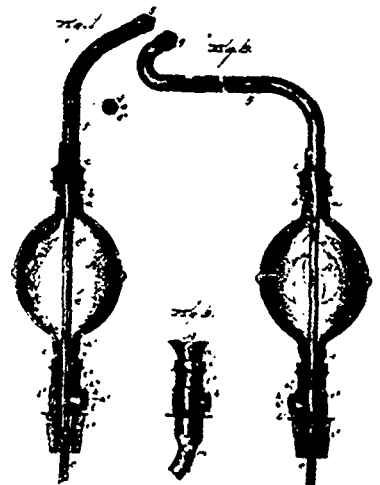
29588 Mueller's Slate for Telephone Desks.



29589 Rogers' Machine for Making Screw Blanks.



29590 Rogers' Wood Screw.



29591 Beall's Atomizer.



FIG. 4.

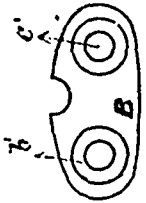
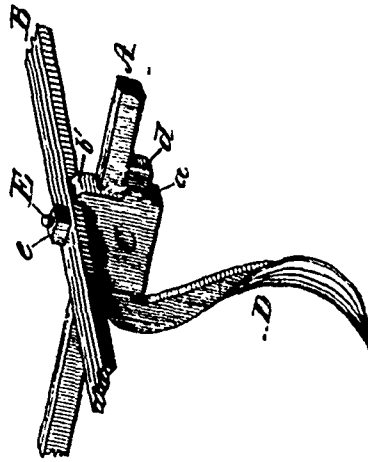
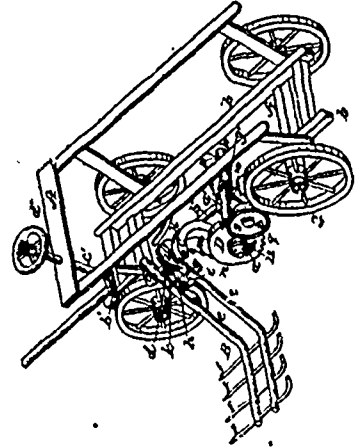


FIG. 3.

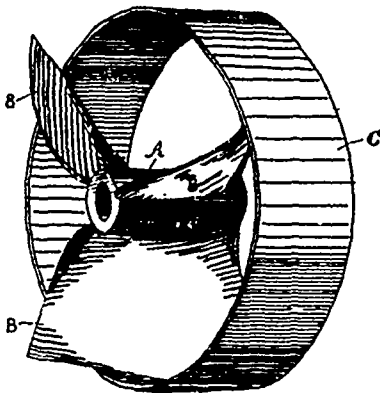


28593 Keoley's Iron Harrow.



29594 Dwellley's Hay Rake and Loader.

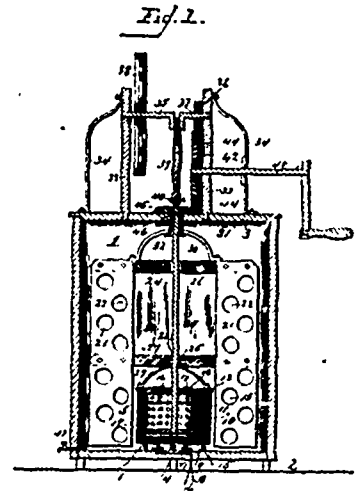
29592 Charreau's Countersunk Perforations in Castings.



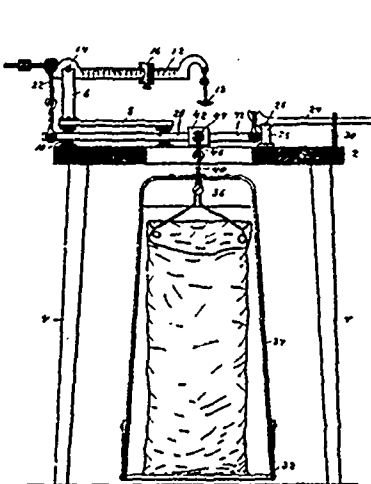
29595 Strong's Propeller Wheel.



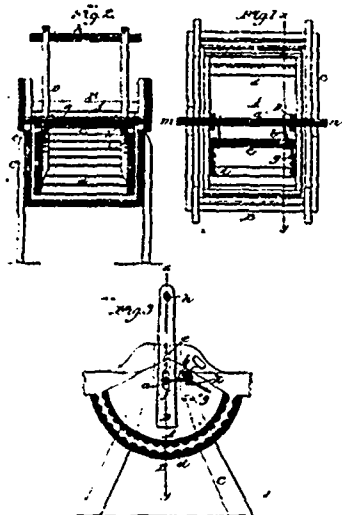
28598 Noyes' Bed Bottom.



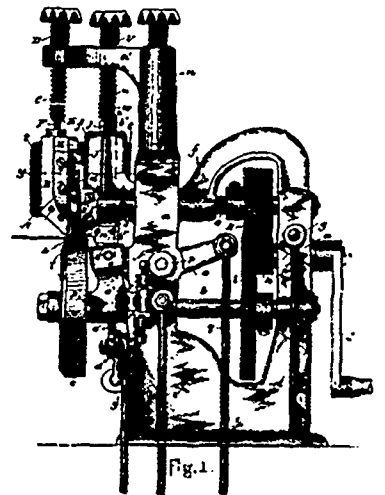
29597 Campbell's Churn.



29598 Lloyd's Weighing Scale.



29599 Boughton's Washing Machine.



29600 Eppler's Solo Fitting Mechanism.