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INVENTIONS PATENTED.

No. 13,619. Improvements in Machines for Cutting Button Holes. (*Perfectionnements aux machines à tailler les boutons.*)

Charles A. Lake, Lynn, Mass., U. S., 4th November, 1881; for 5 years.

Claim.—1st. In combination with a rotating shaft, a head or part of the clutch fixed thereon, a stop attached to said head, and a movable rod or bar arranged to be automatically thrown into position to engage with said stop and arrest the motion of the head at regular intervals. 2nd. The combination of the two parts of a clutch, the shifting lever, pitman rod and treadle, with a movable locking rod arranged to be thrown into engagement with a stop, or the fixed part or head of said clutch, said movable locking rod being retracted by the downward motion of the pitman N for clutching. 3rd. The combination of head J having stop *m*, with rod O, lever P, spring J, incline O, shipping lever L having pin *a*, and the treadle and pitman, whereby the same movement that brings together the parts of the clutches also frees the head from the locking rod O. 4th. The combination of the two parts of a clutch and the stop *m* on the fixed part thereof, with shipping lever L arranged and adapted to engage said rod or connections thereof and retract the same. 5th. In combination with the rod O and devices for advancing and retracting the same, the curved brake spring P and the head J to which it is attached. 6th. In combination with the two parts of a clutch, the shipping lever L, latch bar *r*, and pitman N notched at *s*. 7th. In combination with the two parts of a clutch, the shipping lever L, latch bar *r*, spring *a*, notched pitman N and oblique piece *g*, attached to the fixed part of said clutch and adapted to operate said latch bar. 8th. The combination of pitman N, spring *o*, shipping lever L, the two parts of a clutch, and locking and unlatching mechanism for the fixed part of the clutch. 9th. In combination with the plunger D and cutter E, the bed plate F and elastic cushion *z*.

No. 13,620 Improvements on Upright Piano-forte Actions. (*Perfectionnements à l'action des pianos droits.*)

Albert K. Hebard, Cambridge, Mass., U. S., 4th November, 1881; for 5 years.

Claim.—1st. A jack composed of a lever C hinged to a stationary rail and recessed as at *m*, and of a fly I provided with a spring *e* and arranged to rest upon the lever and hinged to a hammer butt *h*, in combination with a hammer key connected with the jack lever C. 2nd. A jack composed of a lever C hinged to a stationary rail and recessed and shouldered as at *m* and *n*, and of a fly I provided with a spring *e* and arranged to rest upon the lever and hinged to a hammer butt *h*, in combination with a piano key A connected with the jack lever C. 3rd. A jack composed of a lever *c*, hinged to a stationary rail and recessed as at *m*, and of a fly I provided with a spring *e* and arranged to rest upon the lever and hinged to a hammer butt *h*, in combination with a piano key A connected by a lifter rod B to the jack lever C. 4th. A piano-forte action composed of a piano key A, lifter rod B, jack lever C, jack fly I and its spring *e*, hammer E and its butt *h*, and damper G and its lever H. 5th. The fulcrum pin I formed with the flat face N and rounded face U, in combination with the flat spring *o* against which the edges or covers of the flat face of the pin operate.

No. 13,621. Improvements in Stoves. (*Perfectionnements dans les poêles.*)

Michael C. Armour, Chicago, Ill., U. S., 4th November, 1881; for 5 years.

Claim.—1st. An oil or gas stove, provided with a cone plate, the ends of which are depressed and terminate in steps, in combination with post rising from the body of the lamp and penetrating perforations in said steps. 2nd. An oil or gas stove, the lamp of which is provided with perforated posts, a cone plate having ends which are perforated, and hooks for securing said cone plate down in its place. 3rd. An oil or gas stove provided with lamp chimneys terminating below in a plane inclining downward and backward, in combination with a lamp top which has similarly inclined surface corresponding with said chimneys. 4th. A stove top heating chamber B elevated above the floor of the lamp chamber and provided with apertures in its own floor, in combination with a lamp detachably arranged below chimneys fitting in the floor apertures and opening into the heat chamber above, and reaching to the lamp top below, and provided with front apertures at their bases adapted to allow the passage of the burners, and a sliding plate arranged in front of the chimneys and provided with apertures corresponding to the front apertures of the chimneys. 5th. An oil or gas stove having chimneys provided with openings at their sides for the purpose of admitting the burners. 6th. An oil or gas stove provided with an ordinary oven, in combination with an oven through which the combustion current passes. 7th. An oil or gas stove provided with an ordinary oven, in combination with a top over the combustion current and near enough to the burners for cooking, and an oven through which said current passes. 8th. An oil or gas stove provided with a warming chamber entirely through which the lamp chimneys pass, in combination with an oven through which the combustion current passes. 9th. An oil or gas stove provided with a warming chamber entirely through which the lamp chimneys pass, in combination with a top over the combustion current, and near enough to the burners for cooking, and an oven through which said current passes. 10th. An oven through which the combustion current passes, provided with an inner casing which, in connection with the main casing, forms a discharge chimney which opens out of the oven chamber at a point considerably below the top, and not closely over the entrance thereof, for the purpose of inducing a thorough distribution of the products of combustion through the oven while at the same time the remaining heat of the combustion current as it passes through said chimney is utilized. 11th. An oven through which the combustion current passes, provided with an inner casing, which, in connection with the main casing, forms a discharge chimney which opens out of the oven chamber at a point considerably below the top, and not closely over the entrance thereof, for the purpose of inducing a thorough distribution of the products of combustion through the oven while at the same time the remaining heat of the combustion current, as it passes through said chimney, is utilized. 12th. A stove top heating chamber arranged above the lamp, in combination with an oven arranged at the side of, and communicating with said chamber, and having the principal part of its heating space higher than the tops of the chimneys or other points at which the flame or combustion current is free to be diverted. 13th. The oven C, stove top heating chamber B, chimney *h*, provided with front aperture, damper *r* and lamp.

No. 13,622 Improvements on Machines for Forging Horse Shoe Nails. (*Perfectionnements aux machines à forger le clou à cheval.*)

Silas S. Putnam, Boston, Mass., U. S., 4th November, 1881; for 15 years.

Claim.—1st. In a machine for forging horse shoe nails and other articles, the vibrating hammers D D G G mounted upon shafts C C E E and actuated by rods *h h i i* pivoted thereto at points, in one pair outside, and in the other pair on the inner side of the centres on which they vibrate. 2nd. The vibrating hammers D D G G mounted upon shafts C C E E and actuated by rods *h h i i* pivoted thereto at points, in one pair outside, and in the other pair on the inner side of the centres on which they vibrate, and connected with the piston rod of an engine or motor, whereby the movement of the piston in either direction will cause the hammers of one pair to approach each other to give the blow, and the hammers of the other pair to simultaneously recede or separate from each other. 3rd. The valve actuating mechanism consisting of the bell crank lever L connected at its upper end with the valve rod *p* and having its fulcrum at *g*, in combination with the plate 19 attached to the piston rod *f* and having a cam groove adapted to vibrate the lever L. 4th. The combination, with the cross head H and connecting rods *h i*, of the adjustable coupling pins I, each having a

screw shank 18 and one or more branches *k*. 5th. The feed rolls M M with their connected shafts P Q supported in the pivoted frame N and adapted to be vibrated therewith, to carry the nail rod into the path of the cutters, in combination with means for automatically rotating the feed wheels to advance the nail rod, after each finished nail has been severed therefrom. 6th. The feed rolls M M with their connected shafts P Q supported in the pivoted frame N and adapted to be vibrated therewith, to carry the nail rod into the path of the cutters by mechanism connected with the reciprocating bar U, in combination with the ratchet wheel *h* and pawl *e*, whereby the rotation of the feed wheels, to advance the nail rod, is effected in the return movement of the shaft P Q, after the finished nail has been severed. 7th. In combination with the hammers D D G G, the vertical slide bars A B, the latter B arranged to pass between the helves of the said hammers, said bars being provided with adjustable cutters *h* and adapted to be simultaneously moved in opposite directions to cause the cutters to advance and recede. 8th. The combination, with the vertical slide bars A B, of the pivoted rocker C connected therewith and actuated by the reciprocating bar U. 9th. The combination, with the sliding bar U, of the rock shaft E and its lever D connected, at one end, with the piston rod *f* and having, at its opposite end, a projection *n* adapted to enter a notch *w* in the bar U, and the lever G connected with the bar U by a spring *h* and actuated by a cam *i* on the wheel H, as the latter is rotated by mechanism connected with the piston rod. 10th. The combination, with the lever D and its projection *n*, and the slide bar U with its notch *w*, of the projections *g* on the underside of the bar U. 11th. The combination, with the lever G and its actuating cam *i* on the wheel H, of the ratchet wheel I secured upon the shaft of the wheel H and rotated intermittently by the pawl *e* pivoted to the arm *h* of the rock shaft E, whereby the cutters and feed rods are brought into action and returned to their normal position at each complete revolution of the ratchet wheel. 12th. The wheel K secured to the shaft *d* and provided with a cam *h*, in combination with the lever *e* connected with the arm *k* of the throttle valve *l* in the steam pipe *l*, and the spring *m*, whereby the steam is partially shut off just before the completion of the nail, and again let on after the finished nail has been cut off.

No. 13,623. Improvements in Apparatus for Lowering and Raising Boats on Vessels. (*Perfectionnements aux appareils d'abaisser et monter les canots des vaisseaux*)

Reginald H. Earle, St. John's, Nfld., 4th November, 1881, for 5 years.

Claim.—1st. The fixed davits C, swinging frame D and cradle E, provided with rope and tackle. 2nd. In boat lowering apparatus, the swinging frame consisting of the bent arms *c* connected together and carrying a suspended cradle at their outer ends, in combination with the davits C. 3rd. The gravity cradle E consisting of hooks *t* and cross bars *h*, in combination with the swinging frame D that is fitted for being raised and lowered from the vessel. 4th. In boat lowering apparatus, the combination of stands B, pivoted davits C and the swinging frame D jointed to the side of the vessel, when by either the boat the frame can be suspended from the davits. 5th. The levers *a*, in combination with the stands B, and swinging arms *e* of the frame D. 6th. The dogs *b* combined with the stands B, and jointed davits C.

No. 13,624. Improvements in Electrical Lamps. (*Perfectionnements aux lampes électriques*.)

Henry B. Sheridan, Cleveland, Ohio, U. S., 4th November, 1881, for 5 years.

Claim.—1st. In combination with the core *c* working in the two coils D E, and the carbon holders K H, of the lever *a* provided with the arm *l* and plate *h* the lever *a* provided with the pawl *x*, having a different pivoting point from the lever *d* and connected with the said lever *d* adjustably, the spring *i*, the three part cone pulley H and the chains I V, whereby the points of the carbons are kept in the same position automatically. 2nd. The combination, with the base plate B and the spring *i*, of the part *j* having offset, and the screw *k* carrying sliding block *l*, whereby the tension of the said spring can be regulated. 3rd. The combination, with the lever *d* operated by the magnet core *c*, and the base plate B, of the non-conducting hanger *m* having copper plate *n*, the non-conducting standard *p* having copper plate *o*, and the conduction wires *q* leading to the binding posts I Y, whereby the cessation of a current through the stronger coil will cause the opening of a direct circuit through the said binding posts. 4th. The combination, with the carbon holder B having perforated guide plate, guide rods X X attached to plate Y and carbon S, of the carbon S, holder K, pipe G, wire F, contact plates *u* and wires *g*, whereby the abnormal separation of carbons S S operates to form a short circuit between the binding posts of the fine wires. 5th. The combination, with the open outer ends of the magnet coils, of the vibrating plates *4*, whereby the sliding core is retarded.

No. 13,625. Improvements on Cigar-holders.

(*Perfectionnements aux porte-cigares*.)

Henry A. Stone, Brooklyn, N. Y., U. S., 4th November, 1881, for 5 years.

Claim.—1st. The combination, with the mouth piece A, of the holding tube B having spring arms C, and the sliding sleeve D, said holding tube and sleeve having corresponding cylindrical portions. 2nd. The combination of a mouth piece with a holding tube provided at one end with spring arms, and with a sleeve similar in form to said holding tube, adapted to slide thereon and compress said spring arms, said holding tube and sleeve being formed with closely fitting cylindrical portions, whereby a practically air-tight joint is appended between said portions at any point of adjustment.

No. 13,626. Improvements in Paint Mills.

(*Perfectionnements aux moulins à couleurs*.)

John McDougall, Montreal, Que., 4th November, 1881, for 5 years.

Claim.—One or more of the rollers having in addition to the ordinary rotary motion, a transverse reciprocating vibratory movement.

No. 13,627. Improvements in Stove Educts. (*Perfectionnements aux décharges des calorifères*.)

John F. Lloyd, Boston, Mass., U. S., 4th November, 1881, for 5 years.

Claim.—1st. The smoke receiver A open at its opposite ends, and in its front and rear, as described, and provided with the covers *b*, the adjustable thimble B and slide C. 2nd. The combination of the elbow pipe S with the smoke receiver A, open at its opposite ends and in its front and rear, and provided with the end covers *b*, and the adjustable thimble B and slides C.

No. 13,628. Improvements in Wrappers for Bottles, Jars, etc. (*Perfectionnements aux classes des bouteilles, jarres, etc.*)

Bennett D. Marks, Louisville, Ky., U. S., 4th November, 1881, for 5 years.

Claim.—1st. A bottle wrapper made from a sheet or veneer of wood, and having ridges or projections C formed upon its outer surface. 2nd. A bottle made from a sheet or veneer of wood with the upper end slotted or gored out, with a retaining cord, band, or tie, which is passed around the bottle in any suitable manner.

No. 13,629. Improvements on Steam Boiler and Other Furnaces. (*Perfectionnements aux fournaux des chaudières à vapeur et autres*.)

William S. Hutchinson, Chicago, Ill., U. S., 4th November, 1881, (Extension of Patent No. 6,727.)

No. 13,630. Improvements on Chain Pump Buckets. (*Perfectionnements aux godels des chapelets*.)

Theodore Hoyt, (Assignee of Edwin Hoyt), Stamford, Ct., U. S., 4th November, 1881, (Extension of Patent No. 6,873.)

No. 13,631. Improvements on Spring Hoes, or Teeth for Grain Drills. (*Perfectionnements aux houes élastiques, ou dents des semoirs-traceurs*.)

James S. Bogle, Thomas Ludlow and Rodgers, Springfield, Ohio, U. S., 4th November, 1881, (Extension of Patent No. 7,288.)

No. 13,632. Improvements on Pumps. (*Perfectionnements aux pompes*.)

Julius A. Pease, West Medford, Mass., 8th November, 1881, for 5 years.

Claim.—1st. A pump-cylinder having a lift-discharge, a force discharge and an intermediate hollow piston, provided with discharge openings at its top, and an inlet valve at its lower end, and having an adjustable stop-rod adapted to close the said piston valve. 2nd. The combination, in a pump having a lift discharge above the piston, and a force discharge below the piston, of the hollow cylindrical piston F open at its upper end and having a valve at its lower end, with an adjustable stop rod X carried by said piston and having the relation to its valve. 3rd. The combination, in a pump, of the cylinder sections A A, the hollow piston F, open at its top and valved at its lower end, and a packing for said piston, with the adjustable stop-rod X, a lift-discharge at the top of said cylinder, and a valved force discharge below said piston.

No. 13,633. Improvements on Apparatus for Purifying Alcoholic Liquors. (*Perfectionnement aux appareils de rectifier les liqueurs alcooliques*.)

Brown A. Osgood, Wakefield, Mass., U. S., 5th November, 1881, for 5 years.

Claim.—1st. The improved apparatus for purifying liquors consisting of the retort *a* having evaporating tubes *c* and pan *d*, the conductor *f* containing two or more sets of inner and outer cones K L and *n* p each outer one provided with a perforated pan *m* and the tank *g* having faucets *u*. 2nd. The pan *d* having a central depression and provided with tube *h*, perforations *e* and annular partition *v*, in combination with the retort and lower set of cones. 3rd. The combination, of the outer cone K having notches K' and supporting the perforated pan *m*, and the inner cone L secured to the outer cone and having its lower raised above the pan upon which the outer cone rests the outer cone being open and the inner cone closed at the top. 4th. In combination, with the set of cones K L and pan *m*, the similar set of cones *p* n supported by said pan.

No. 13,634. Improvements on Car Axle Box Lubricators. (*Perfectionnements aux boîtes à graisse des chars*.)

Giles F. Gear, Cleveland, Ohio, U. S., 5th November, 1881, for 5 years.

Claim.—1st. In a railway car journal box, the brush J pivoted to the bar I by means of a stem or wrist connecting the said brushes to said bar. 2nd. In car axle boxes, the oil vessel or reservoir F constructed and arranged in relation therewith and to the axle, in combination with the bar I and brushes. 3rd. In combination with a car axle box, the ring I provided with one or more guides extending across the periphery of the said ring and reaching over the collar or journal of the axle. 4th. In combination with a car axle box, the pivoted brushes J and ring I provided with a curved or caved periphery and guides extending across said axle and reaching over onto the collar or journal.

No. 13,635. Improvements on Mills for Manufacturing Meal. (*Perfectionnements aux moulins à bis.*)

Samuel R. Thompson, Brookline, Mass., U.S., 8th November, 1881; for 5 years.

Claim—1st. The method of treating cotton seeds, consisting in passing the seeds between a stationary toothed concave and a rapidly rotating cylinder having fine cutting teeth or points, thereby grinding or reducing the seeds to meal and detaching the lint or cotton from the shells of the seeds, leaving mixed meal and lint or cotton in condition to be separated by bolting. 2nd. The combination of a fixed concave P having longitudinal teeth P², and the rotary cylinder C having minute cutting teeth C², adapted to strip or detach the cotton from the shells of cotton seeds and adapted to reduce particles of grain.

No. 13,636. Improvements on Telephones. (*Perfectionnements aux téléphones*)

Michael D. Connolly, Philadelphia, Pa.; Thomas A. Connolly, Washington, D.C., and Thomas J. McFiehe, Pittsburgh, Pa., U.S., 8th November, 1881; for 5 years.

Claim—1st. In a telephonic exchange having a series of normally disconnected lines grounded at the place of convergence and in circuit with connecting mechanism, the combination, with such mechanism, of a main battery or generator, or equivalent motor, and suitable means for controlling said battery or motor through said lines and for effecting the necessary movement of such connecting mechanism. 2nd. A series of lines or conductors leading to a central station, and in circuit at such station, with connecting mechanism, generators at the local stations or distant termini of said lines for sending electric impulses over said lines, and a main battery or motor at the central station operating responsively to impulses sent over said lines from the local batteries to produce the necessary movements of the connecting mechanism for the connection and disconnection of said lines. 3rd. In a telephonic exchange system comprising a series of normally disconnected lines converging to a central station provided with mechanism for connecting said lines, said mechanism being moved by a main battery or equivalent motor located at the central and controlled by electric impulses sent from the local batteries located at the remote ends or at distant points on said lines and operating through the latter, the combination, with said lines, central connecting mechanism, main and local batteries, of relays located at the central station and operated by said local batteries, to throw on the central station and thereby effect the necessary movements of the central mechanism for connecting and disconnecting the lines. 4th. A series of independent lines converging to a central station provided with connecting mechanism, a main battery for operating said mechanism, relays for throwing on said battery and local batteries for operating said relays, switched in each line in the circuit between the local batteries and the relays, and capable of being operated from other lines, whereby one subscriber calling another may cut out the relay of the latter. 5th. A series of disconnected lines converging to a common station, means at said station for connecting any two of said lines and controllable from the distant stations, and relays in said lines for admitting current to operative devices at said central station, a switch or shunt located between the relay and the connecting mechanism and operated automatically by a calling or seeking member, whereby the relay of a sought line is temporarily cut out. 6th. The combination, in a telephonic exchange or electric line connecting apparatus, of a series of conductors normally grounded at a central or common station, each of said conductors having in circuit a relay or electric key, an engaging finger sustained on a ring or traveller, a ground and line switch all in circuit, and a moveable section or contact bar normally out of circuit, but carrying said switch, whereby, when a given line is worked for calling or connecting, its finger will be carried into engagement with the contact bar of another line, the grounds of both lines being thereby broken, the calling line through the movement of its finger, and the other through the movement of its switch, the lines connected and a through circuit established over both. 7th. The combination, in a telephonic exchange or line connecting apparatus, of a relay or electric key adapted to respond to currents sent over a line in circuit therewith, a battery connected with said relay so as to be thrown into a short independent line when said key is closed, an electric magnet in circuit with such battery, a progressive movement connected with the armature of said magnet, or wheel, or traveller in circuit with the relay line, but arranged to be moved by said progressive movement, whereby, when a working current is sent over said line through said relay, the battery is thrown onto the short line, and the wheel or traveller caused to move and carry the finger along. 8th. The combination, in a telephonic exchange or electric line connecting apparatus, of a series of relays or keys and switching devices normally in circuit therewith, whereby, when two lines are connected through the medium of such connecting apparatus, the relay of a sought or called line will be cut out, while the relay of the calling or seeking line will remain in circuit. 9th. The combination, in an automatic line connecting apparatus, with the switching or connecting devices and their operating mechanism, of relays constantly in the path or circuit of the calling lines, to provide for the restoration to normal of said calling line. 10th. In a telephonic exchange apparatus, a movable finger normally in circuit with the ground at a central exchange or connecting device, and forming a portion of the circuit of a line leading from a distant station to such central, said finger being mounted on a ring or carrier, and adapted and designed when its carrier is moved to come in contact with sections or bars forming parts of other conductors or lines, and by such contact to break its normal ground and secure circuit to ground at another distant station over the contacted line. 11th. A movable conductor pertaining to a given line and normally out of circuit, in combination with suitable devices, whereby the movement of said conductor, by a calling line, breaks the normal or central ground of its own line, and establishes circuit between the two lines. 12th. A relay in combination with a switching device which normally completes circuit to ground at central, through said relay, and which, upon being duly moved, cuts out such ground and leaves a called line in unbroken or continuous circuit with the calling line. 13th. In conducting fingers, which are caused to travel in the act of establishing coincidence of lines, and to come into contact with movable conductors in the path thereof, means whereby the movable conductor of a given line is

shifted out of said path, when the travelling conductor or finger of the line to which it pertains has left home. 14th. A receiving conductor arranged so that it may be moved by the conducting finger of any line, and isolated thereby from possible contact of other conducting fingers. 15th. A receiving conductor, through which circuit may be made from a calling to a called line, said conductor being constructed as described, whereby, when the line to which it pertains is employed in seeking or effecting coincidence or connection with another line, such conductor will be shifted beyond the reach of the other operating lines or other travelling contact devices. 16th. In a telephonic exchange apparatus adapted for automatic circuiting purposes the combination of the following elements, *viz.* a travelling circuiting finger, stud or contact device normally grounded in circuit with a telephonic line, mechanism for causing said circuiting finger to travel a relay to bring said mechanism into action, a switch between said finger and a distant line terminal, for effecting diversion of circuit from ground through another line, and a movable conductor coinciding with the home or normal position of said finger. 17th. In a telephonic or telegraphic line connecting apparatus, the combination, with a series of parallel travellers carrying conducting fingers normally grounding the respective lines leading thereto, of a corresponding series of respective conductors, traversing said travellers at intervals and adapted for engagement of the fingers, said travellers and fingers, and the receiving conductors being so constructed and relatively arranged, that any finger may engage with any disengaged traversing conductor, but that pertaining to its own line, shift the same out of path of the other fingers, switch said receiving conductor into circuit with the line, and break the central ground of both lines. 18th. The combination of a series of lines grounded at independent or local stations, and at a central exchange for a station common to all batteries at each independent station and at the central station, a switch or connecting mechanism at the central actuated by said main battery and operating responsive to currents sent from the batteries at the independent local stations, to cut out the grounds of any two lines (or of all the lines in pairs) at the central and to restore the same. 19th. In a telephonic exchange, a contact piece or finger normally in circuit with ground or a return, and operating to change said circuit to a different line by impingement against another conductor. 20th. A device for actuating an automatic circuit change, and for receiving and sending alarm signals, consisting of a make and break mechanism, an automatic pole changer or reversing key, and an electrical bell, whereby a central switch mechanism may be operated to effect connection of normally independent lines, and, when such connection is effected, alarms may be sent and received without disturbing such switch mechanism. 21st. The combination, with switch mechanism for effecting connection of normally independent lines, of a polarized relay at a central station, and make and break mechanism, an automatic pole changer or reversing key and an electrical bell at subscribers or local stations, whereby, when such switch mechanism has been actuated to the desired extent for effecting the connection of lines, the direction of current from the make and break mechanism is automatically reversed, to enable an alarm to be sent therefrom over the line without actuating the relay in circuit.

No. 13,637. Improvements in Car Wheels.

(*Perfectionnements aux roues des chars.*)

James Rigby, Montreal, Que., 8th November, 1881; for 5 years.

Claim—1st. The combination of a central body portion, the removable tire and removable flange, the tire being held between said flange and one plate extended outwards of the central body portion. 2nd. The body portion having the inner and outer plates, the radial arms and the short arms. 3rd. In combination with the body portion and tire having recesses, the flange portion having studs.

No. 13,638. Improvements on Vinegar Apparatus. (*Perfectionnements aux appareils à vinaigre.*)

Oscar F. Boomer and Henry R. Randall, Brooklyn, N.Y., U.S., 8th November, 1881; for 5 years.

Claim—1st. One or more series of shelves covered with cloth or other fibrous material, and arranged one above another in such manner that the liquid will fall from one shelf, after traversing it and its covering upon the next lower shelf and traverse it and its covering in a like manner. 2nd. The combination, with one or more series of shelves B provided with the ribs C, of the cloth coverings D forming downward projections under the shelves.

No. 13,639. Improvements in Boots.

(*Perfectionnements dans les bottes.*)

Ellene A. Bailey, St. Charles, Mo., U.S., 8th November, 1881; for 5 years.

Claim—The boot A having the upper made of a front piece B and rear piece C, united by side seams D, of which one is open at the lower end and provided with lacing device.

No. 13,640. Improvements on Life-Preservers. (*Perfectionnements aux appareils de sauvetage.*)

Augustus D. Roth, Blackheath, Eng., 8th November, 1881; for 5 years.

Claim—The combination of a floating buoy, for life preservation at sea, with a safe for securing valuables or landing mials, the interior of the buoy being subdivided into an air chamber and receptacles for valuables, with the interior fitted with appliances for saving life or bulky goods, and the combination of sound and sight signals, with such description of buoy and safes, all working together.

No. 13,641. Improvements on Fence Wire Fastenings. (*Perfectionnements au chevillage des clôtures métalliques*)

Thomas S. Woodruff, Erie, Pa., U.S., 8th November, 1881; for 5 years.

Claim—1st. The combination, with the post to which the wire is attached, of a hook headed bolt, and an independent metallic bearing,

between the wire and the post, acting upon said bolt, to cause it to grip the wire between the head and the said bearing face. 2nd. A fence wire fastening consisting of a bolt, the head of which is hooked back far enough to reach over the wire and its bearing, said bearing consisting of metallic facing placed between the wire and the post. 3rd. A fence wire fastening consisting of a hook headed bolt, which hook reaches back far enough to reach over the wire and its bearing, in combination with a washer forming said bearing, which is provided with a slot for the passage of the point of said hook. 4th. A fence wire fastening consisting of a link or loop bent around the wire, and a wedge-shaped nail driven through the ends of said bent link and into the post.

No. 13,642. Improvements in Hand Seeders.

(*Perfectionnements aux semoirs à bras*)

Elijah Kemper, Thornville, Ohio, U. S., 9th November 1881; for 15 years.

Claim.—A hand seeder composed of a can or vessel provided with a valve for regulating the flow of the seed, and the spout having its outer end contracted, and holes made through opposite sides of the spout, near this contracted end.

No. 13,643. Improvements on Two-Wheeled Vehicles. (*Perfectionnements aux voitures à deux roues.*)

Peter Herdic, Philadelphia, Pa., U. S., 9th November 1881; for 15 years.

Claim.—1st. The combination of the vehicle body, the shafts, the cranked axle, the main springs secured to the axle and having pivoted connection at both ends, with the vehicle body and the bracing springs, or their specified equivalents, secured at their rear ends to the axle cranks, and having pivotal connection at their front ends with the vehicle body. 2nd. The running gear for two-wheeled vehicles, consisting essentially of the combination of the cranked axle, the main springs secured thereto, at or about their middles, the braces or bracing springs located above the main springs, and secured at their rear ends to the axle cranks, the cross bars with which the front ends of both sets of springs have pivotal connection, and the bracket or brackets to which the rear ends of the main springs are jointed. 3rd. The combination of the cranked axle, the main springs, the braces or bracing springs, the cross bar to which the braces or bracing springs are jointed at their front ends, and the pendent brackets secured to said bar, and to the lower end of which the main springs are jointed. 4th. The combination of the vehicle body, the shaft, the cross bar and the braced pendent brackets. 5th. The two-wheeled passenger vehicle consisting of a body, the cranked axle, the main springs secured about midway their lengths to the axle and having pivoted connection at their front and rear ends with the body, the bracing springs rigidly connected at their rear ends with the axle cranks located above the main spring and having pivoted connections at front with the body, the shafts, the driver's seat and the rear door or doors.

No. 13,644. Improvements on Vehicles. (*Perfectionnements dans les voitures.*)

Peter Herdic, Philadelphia, Pa., U. S., 9th November 1881; for 15 years.

Claim.—1st. The combination of the cranked axle, the main supporting springs secured thereto, and the braces located above said springs and having connection with the axle cranks and the vehicle body. 2nd. The combination of the cranked axle, main supporting springs rigidly secured thereto, and bracing springs located above said supporting springs and rigidly connected, at their rear ends, with the axle cranks. 3rd. The combination of the vehicle bed or body, trusses or brackets having rigid connection therewith, the cranked axle, the main supporting springs secured to said axle and having jointed connection, at their front ends, with the vehicle body, and the braces or bracing springs connected with the axle cranks located above the main supporting springs and having jointed connection, at the front ends, with the vehicle body through or by way of the said trusses or brackets. 4th. The combination of the cranked axle, the main supporting springs, the trusses or brackets, the frame or cross-bars to which these brackets are secured and with which frame said springs are jointed at their front ends, and the bracing springs rigidly connected at their rear ends with the axle cranks, and jointed at their front ends to the brackets or trusses. 5th. The combination of the vehicle bed or body trusses or brackets having rigid connection therewith, the cranked axle, the main supporting springs secured to said axle and having jointed connection at their front ends with the vehicle body, the braces or bracing springs connected with the axle cranks located above the main supporting springs and having jointed connection at their front ends with the vehicle through, or by way of the trusses or brackets, the non-turning front axle-tree, or axle proper, the front supporting springs jointed to the axle-tree and having rigid connection at their rear ends with the vehicle body, and the front braces or bracing spring having connection with the vehicle body, located above the front supporting springs and having jointed connection at their front ends with the axle-tree. 6th. The combination of the non turning front axle tree, or axle proper, the turning posts provided with axle arms, the front supporting springs jointed to the axle tree, the front bracing springs also jointed to the axle-tree, and the vehicle body with which all of said springs have rigid connections at their rear ends. 7th. The running gear consisting of the combination of the rear cranked axle, the rear supporting and bracing springs, frame or cross bars, the bracket or trusses thereon, with which frame and brackets the front ends of said supporting and bracing springs are respectively jointed, the non-turning front axle-tree or axle proper, the supporting and bracing springs jointed to said axle-tree at their front ends and, at their rear ends respectively, connected firmly with the bracket frame or cross bars and adapted for rigid connection with the vehicle body. 8th. The combination of the axle tree, or axle proper, having the pairs of struts or braces at its ends, provided with bearing seats or sockets, and the axle arm carrying turning posts formed with the rounded or semi-circular bosses at both ends, fitted in the strut sockets and secured in place. 9th. The axle arm carrying turning post provided with the bosses and the threaded studs at both ends. 10th. The vibrating bracket Q having

the arms or forks *g g g* and perforated lugs or sockets *m m*. 11th. The combination of the vibrating draft bar, the forked bracket Q connected therewith, the lugged clip P and the bolt O by which to connect the bracket and clip to the axle tree. 12th. The combination of the non turning axle-tree, or axle proper, its pairs of struts or braces, the axle arm carrying turning posts, the vibrating draft bar, the turning post braces with which said bar is jointed at its ends, the vibrating bracket and the lugged clips by which to pivot the bracket to the axle tree.

No. 13,645. Improvements in Pawl and Ratchet Devices. (*Perfectionnements aux appareils à dent et roquets.*)

Everett G. Passmore, Philadelphia, Penn., U. S., 9th November 1881; for 5 years.

Claim.—The combination, with the inclines on the sleeve or band and the slotted shaft, of a pawl having projecting lips.

No. 13,646. Improvements in Combination Tools. (*Perfectionnements aux outils à combinaison.*)

Culberson S. Garrigus, Landusky, Ohio, U. S., 9th November 1881; for 5 years.

Claim.—1st. The bifurcated spring shank B having a screw point *b* and circular disks *d* provided with V-shaped depressions, in combination with the screw bolt *a* and a tang C having a circular disk or head C' provided with wedge-shaped projections *c*. 2nd. In a farm implement, a bifurcated shank serrated upon the inside with means for securing it to a wooden handle, a removable tool having a tang serrated on the outside adapted to enter between the bifurcations, and a bolt or equivalent for clamping the latter upon the former, whereby the tool may be adjusted recently at any angle. 3rd. The combination of a ferrule or socket secured to an edge, with a farm tool handle having a bevelled shoulder adapted to fit the same.

No. 13,647. Clothes Drier. (*Séchoir à linge*)

Thomas Laddon, Yorkville, Ont., 9th November, 1881; for 5 years.

Claim.—In connection with a stovepipe, a metallic band having an adjustable joint to enable the band to be fitted to any variation in the size of the pipe, in combination with wire arms radiating from the band and connected together by a wire hoop forming with the arms a support for carrying clothes and other articles.

No. 13,648. Improvements in Creamery Vats.

(*Perfectionnements aux boîtes à lait.*)

David H. Burrell, Little Falls, N. Y., U. S., 9th November, 1881; for 5 years.

Claim.—1st. The method of treating milk for raising cream, consisting in simultaneously applying heat beneath the milk vessel, and cold at the top of the contents of said vessel, whereby the cream or butter globules brought to the bottom of the vessel by the currents thus created therein, are caused to expand, and rapidly rise to the surface. 2nd. In a milk cooling apparatus, a perforated outlet tube, or strainer, adapted to permit the flow of milk and prevent the passage of cream. 3rd. The combination, with a milk pan, of a perforated skimmer arranged at the lowest point of the pan and connected with a faucet at one end, whereby it is adapted to draw off the milk from beneath the raised cream and retain the latter within the pan. 4th. In a milk setting apparatus, the combination, with an outlet vat having troughs, or funnels for the introduction of water, and outlet tubes, and faucets for the escape of the same, of one or more milk pans provided with adjustable conduits for the circulation of a cooling or heating medium, said conduits being connected by suitable tubes with a source of supply, and with the troughs or funnels at the end of the outlet vat, whereby a circulation is produced through said conduits and vat, and the contents of the milk pans brought to any desired temperature. 5th. In a milk cooling apparatus, the combination, with an outlet vat having inlets and over flow tubes, and milk vessels contained therein and provided with adjustable conduits having inlet tubes connected with a water supply, and exit tubes communicating with the space in the outer vat, surrounding the milk vessels, of one or more reservoirs for water and ice communicating with said conduits and vats, and a pump adapted to force the cold water through the same in a continuous circuit. 6th. In a milk setting apparatus, the combination with the outer vat A having covers E E, partition *a*, troughs *c*, and overflow tubes *k k*, of the milk vessels B B having adjustable conduits provided with vertical tubes *g g*, and the flanged cross pieces FF perforated for the passage of the vertical tubes *g g*, adjustable therein by means of the cap *i* and thumb screws *h*. 7th. The combination, with the vat A, having troughs *c* and overflow tubes *k k*, and the milk vessels B B provided with adjustable conduits having tubes *g g*, of the ice box I having tubes K, connecting with the conduits at one end, and the tube H connecting the opposite end of the conduits with the troughs *c*, whereby circulation is maintained through the conduits and in the space between the inner and outer vats. 8th. In a milk cooling apparatus, the combination, with a milk vessel, of an open ice receptacle or conduit. 9th. In a creamery or milk cooling apparatus, the combination, with the outer vat A divided by partition *a* into twin compartments and having shoulders *p p*, spaces *t* beneath the milk vessels, spaces or chambers *s s* above the shoulders *p p* on each side of said vessels, steam pipes *r r* in the lower space, and tight fitting covers E E, of the milk vessels B B resting on cleats *h h*, between the shoulders *p p* in either compartment, and provided with troughs or conduits *g g* adapted to contain ice or water.

No. 13,649. Improvements on Churns. (*Perfectionnements aux barattes.*)

Edward Seaman, New Minas, N. S., 9th November, 1881; for 5 years.

Claim.—1st. A body of a churn having concave interior walls, and a revolving dasher carrying rollers that are adapted to roll in contact with the said concave walls so as to press and break the butter glo-

bules of the cream. 2nd. The combination, with the body of churn A and the roller frame C D, of the thumb screw F whereby the said roller frame can be tightened in place and readily detached. 3rd. The dasher roller frame C D, and rollers B journaled to said frame.

No. 13,650. Improvements on Harrows. (Perfectionnements aux herses.)

George H. Johnson, Saltpetre Cave, Va., U. S., 9th November, 1881; for 5 years.

Claim.—1st. The combination, with the harrow tooth, consisting of a flat regular triangular plate, of a forked vertically adjustable tang, shank or holder. 2nd. The combination, with the harrow beams having vertical openings, of the forked shanks or holders having pivoted regular triangular plates or teeth, and means for so adjusting the said shanks as to force the upper edges of said teeth against the under sides of the harrow beams. 3rd. The combination of the harrow beams, vertical shanks or holders P having triangular teeth L and the slotted longitudinally adjustable plates U having studs X. 4th. The combination, with the vertical shanks or holders having triangular teeth L, of the longitudinally adjustable slotted plates U having studs X, and the bearing plates Y secured upon the under side of the harrow beams.

No. 13,651. Improvements on Broom Machines. (Perfectionnements aux machines à balais)

Alphonso Walrath, Adelaide C Bronson, Amsterdam, N. Y. U. S., and Valencio E. Fuller, Hamilton, Ont., 9th November, 1881 (Extension of Patent No. 6,742.)

No. 13,652. Buggy Spring Coupling and Support. (Ajustage et support des ressorts de bogheis.)

John McIbride, Strathroy, Ont., 9th November, 1881; (Extension of Patent No. 6,752.)

No. 13,653. Improvements on Machines for Grooving Rolls. (Perfectionnements aux machines à canneler les rouleaux)

Edwin Reynolds, Milwaukee, Wis., U. S., 9th November, 1881, for 5 years.

Claim.—1st. In combination with a cutting tool, a bed or carrier provided with means for supporting a roll, a positive acting mechanism, arranged to impart a rotary motion to the roll as it is carried beneath the cutter by the movement of the bed or table. 2nd. In combination with a cutting tool and a movable bed or carrier, provided with means to sustain a roll and impart a positive rotation thereto, as it is carried lengthwise beneath the cutter, an automatic disconnecting device operating in connection with the driving train, to momentarily disconnect one portion of the train from the other during the time that the cutter is out of action, whereby the relation of the roll to the driving gear is changed in such manner as to present a new surface of the roll to the action of the cutter, each time that the latter comes into play. 3rd. In a machine for cutting spiral grooves in grinding rolls, a reciprocating bed or carrier, provided with bearings to sustain the roll, gearing upon the bed to revolve the roll upon its axis, a stationary rack to drive said gearing, and an automatic disconnecting or uncoupling device, whereby one portion of the driving gear is disconnected from, and permitted to turn ahead of the remaining gear momentarily, during the time that the cutter is out of action. 4th. In combination with the stationary cutter E, the reciprocating bed B with supports for the roller Z, the gear train located upon the bed for turning the roller upon its axis, the stationary rack F, an uncoupling or disconnecting device in the driving train, and a dog Q arranged to operate the disconnecting device, as the bed moves in one direction only. 5th. In a machine for spirally grooving grinding rolls, the combination of the positively driven dial plate K, disk L, coupling pin M, spindle O and dog Q. 6th. The combination, in a train for rotating the roll, of the dial plate K, having several circular series of holes, the disk L, and the radially adjustable coupling device. 7th. The combination of a stationary cutter, a bed provided with means for sustaining the roll and carrying the same lengthwise past the cutter, and positively acting mechanism for imparting a rotary motion to the roll, as it is carried endwise beneath the cutter. 8th. In combination with the reciprocating bed and the devices thereon, for sustaining and rotating a roll, a stationary rack arranged to operate the roll turning devices as the bed is moved endwise. 9th. The combination of a driving disk provided with a circular series of holes or teeth, a driven shaft provided with a device which engages with the disk and an intermittently acting dog, whereby the shaft and disk are momentarily disconnected in order that one may change its relation to the other. 10th. In combination with the reciprocating bed provided with means for supporting a roll, and gearing for turning the same, a disconnecting device connected with said gearing, and a yielding device located upon a stationary support and arranged to operate the disconnecting device, as the bed moves in one direction. 11th. In a roller grooving machine, the combination of the reciprocating bed and roller turning devices, with the stationary operating rack adapted to be reversed, whereby the machine is adapted to cut either right or left hand spirals at will. 12th. The reciprocating bed provided with the roller supports or boxes, and with a gear train having a coupling adapted for connection to the roll, for the purpose of turning the same upon its axis, while under the action of the cutting tool. 13th. The combination of the reciprocating bed, the stationary rack F, pinion H, shaft G, wheels I L, disk K, coupling pin M, spindle O and dog Q. 14th. The combination of the stationary cutter, the bed adapted to sustain the roll, and carrying the same endwise beneath the cutter, gearing mounted upon the bed to turn the roll, and a stationary device for imparting motion to the gear train, as the latter is moved with the bed. 15th. The combination of a stationary cutting tool, a carrier to support the roll, and positive acting mechanism arranged to impart a positive rotary motion to the roll, as the latter passes endwise beneath the cutter.

No. 13,654. Improvements in Registering Apparatus. (Perfectionnements aux appareils à compter.)

John W. Fowler and Daniel F. Lewis, Brooklyn, N. Y., U. S., 9th November, 1881, for 5 years.

Claim.—1st. A combination of parts for registering units, and subsequently ringing a bell, to attest or give audible notice of each registration, comprising a distinct bell lever having the bell hammer and striking spring attached thereto. 2nd. The combination of a distinct bell lever with a working pawl, a main ratchet wheel and a detent pawl. 3rd. The combination of a distinct bell lever, means for actuating said lever, and a swinging catch. 4th. The combination of a main slide or its equivalent, a distinct bell lever, a single check detent pawl and their springs, with a working pawl, a main ratchet wheel and a unit registering mechanism. 5th. The combination of a main slide, or its equivalent, a distinct bell lever, a single check detent pawl and their springs, with a working pawl, a main ratchet wheel and its shaft, the unit shaft of a trip register, the unit shaft of a continuous register, and connecting gearing. 6th. The combination of a trip hand or any equivalent thereof adapted to be reset at will, and mechanism for resetting the same step by step comprising a reciprocating setting slide within the register case, an exposed pull knob, or its equivalent so connected with said slide as to remain attached to the register, and a retracting spring or springs. 7th. The combination of a reciprocating setting slide arranged vertically within the lower part of the register case, an exposed pull knob, or its equivalent, having a vertical shank rod and a connecting pinion, and racks. 8th. A visual signal or indicator, arranged behind the dial plate of a register and adapted to rotate on an axis parallel to said dial plate, to display different indications successively through an orifice in said dial plate, in combination with means for transmitting motion thereto from a reciprocating setting slide or its equivalent. 9th. An adjustable arm, in combination with a spring and a stop pin, as means for regulating the presentation of the other arms of a rock shaft, through which motion is transmitted to said visual signal. 10th. The combination of an arm having a laterally yielding spring finger and a part actuated by the main slide, or its equivalent, and adapted to engage with said spring finger, for locking said rock shaft at the end of each forward movement thereof. 11th. The combination of a trip register, a reciprocating device in resetting said register at the end of each trip, and an indicator mechanism adapted to be fully actuated to change the reading or indication of the indicator at the first stroke of said setting device. 12th. The combination of a trip register, a reciprocating device for resetting said register at the end of each trip, an indicator mechanism adapted to be actuated by said setting device, and a locking device, for preventing repeated actuations of the indicator by said setting device during the individual setting operation. 13th. The combination of a trip register, a reciprocating device for resetting said register at the end of each trip, an indicator mechanism adapted to be actuated by said setting device, a bell mechanism adapted to interlock with said indicator mechanism during the setting operation, and a main actuating device as means for unlocking the indicator mechanism.

No. 13,655. Improvements on Saw Swages. (Perfectionnements aux clampes à scies)

Simon Kinney and Chauncey Spearin, Chicago, Ill., U. S., 10th November, 1881, for 5 years.

Claim.—1st. The combination, with the base A having clamp plate H, and cap B having standard C, of the cam arm J, post F, roller K, link E and lever D to operate the clamp I, the swage block Q and anvil M. 2nd. The combination of the vertically adjustable anvil M, guide block N, spring O, screw J, swage block Q and clamps H I.

No. 13,656. Improvements in Grinding Mills. (Perfectionnements aux moulins à moulin)

William N. Cosgrave, Faribault, Minn., and Robert Mcrell, Passaic, N. J., U. S., 10th November, 1881, for 5 years.

Claim.—1st. The combination of two or more pairs of grinding rolls, the rolls of each pair of which run at differential speed with a revolving separating fan between each pair of rolls and the next succeeding pair of rolls, and a concave screen or sieve co-operating with each fan, whereby the ground product is delivered directly onto the fans which operate to force the fine flour and middlings out through the screens and to deliver the remaining material to the next pair of rolls for further reduction. 2nd. The combination, with two or more pairs of grinding rolls, the roll of each pair of which run at differential speed with a revolving fan between each pair of rolls and the rolls of the next succeeding pair of rolls having both blades and brushes and a concave screen or sieve co-operating with each fan. 3rd. The combination of two or more pairs of grinding rolls, the rolls of each pair of which run at differential speed with a revolving fan between each pair of rolls and the rolls of the next succeeding pair, onto which the ground product is directly delivered, concave screens or sieves co-operating with the fans, an air trunk into which fine flour and middlings forced through the screens are delivered, and an exhaust for drawing off the fine dust from said air trunk. 4th. The combination of the two or more pairs of grinding rolls, the roll of each pair of which run at differential speed the revolving fan and screen arranged between each pair of rolls the air trunk into which the separated flour and middlings are delivered, perforated inclined deflectors for directing the material into said trunk, and an exhaust at the top of the trunk, whereby a current of air is made to pass through the coarse material as it falls from each fan to the next pair of rolls to cool it, and whereby also the fine dust is drawn out of the trunk and delivered to a suitable dust receiver for further treatment. 5th. The combination of the several pairs of grinding rolls, the rolls of each pair of which move at differential speed, the concave screens between each pair of rolls and the rolls of the next succeeding pair, the rotary separating fans, onto which the ground material is directly delivered and by which the fine flour and middlings are forced out through the screens, and the remaining material delivered directly to the next pair of rolls, with the trunk into which the fine flour and middlings are delivered by the exhaust and the conveyer at the bottom of the machine. 6th. The combination, with the revol-

ing separating fans, of the co-operating screens rendered adjustable toward and from the fans. 7th. The combination, with the hopper, of the feed roller working in the bottom thereof, and the swiveling gate arranged to swing inward so as to leave a lateral discharge opening.

No. 13,657. Improvements on Thill Couplings.
(*Perfectionnements aux ajustages des limonnières.*)

John Richardson, Auster, Ont., 10th November, 1881; for 5 years.

Claim.—The form and action of the thill and thill hooks, in combination with the rubber and rubber holder E and D, the bolt G and plate H.

No. 13,658. Improvements on Steam Cookers.
(*Perfectionnements aux chaudières à vapeur.*)

James Lidstone, Farmington, Me. U. S., 10th November, 1881; for 5 years.

Claim.—1st. The combination, with a steam cooker A having communicating compartments, of the tube H, one part of which extends diagonally through the side and down to the bottom of the cooker, and has no opening save at the lower end and top and the float I, having the stem J provided with the button L. 2nd. The combination, with the cooker A, of the tube M leading down along the side of the cooker A to the space between it and the flange B and connected, at its upper end, by an opening N with the inside of said cooker, whereby the steam and odors are conducted to the fire box.

No. 13,659. Improvements in Eye Glasses. (*Perfectionnements aux lunettes.*)

Fred Testergen, Elizabeth, N. J., U. S., 10th November, 1881, for 5 years.

Claim.—An eye glass having the nose piece or bow spring jointed in the middle so as to permit the lenses to fold sideways towards each other and having the ends of the two sections of the nose pieces, or bow spring, extended past the pivot, and provided with locking devices for holding the same in position for use.

No. 13,660. Improvements on Fences. (*Perfectionnements aux clôtures.*)

David E. Clarke, Wellington, Ont., 10th November, 1881; for 5 years.

Claim.—1st. The combination of the movable piece D with the triangle lock. 2nd. The mode and manner of securing together the panel and triangle lock. 3rd. The combination of the foot F with the triangle lock.

No. 13,661. Improvements on Coal Oil or Gas Stoves. (*Perfectionnements aux poêles à pétrole ou à gaz.*)

James Tredale, Toronto, Ont., 10th November, 1881; for 5 years.

Claim.—In connection with the oven of a cooking stove in which the flame and heated gases are conveyed direct from the burner through a space between the inner and outer skins forming the sides of the oven, the combination of utensils made to fit on the outside of the oven and provided with hollow arms D, extending immediately over the point where the flame and heated gases, passing from the burner, enter the space between the two skins of the oven.

No. 13,662. Improvements on Machinery for Breaking Flax, Hemp, &c. (*Perfectionnements aux machines à teiller le lin, le chanvre, &c.*)

John Shinn and Abbott F. Fuller, Philadelphia, Pa., U. S., 10th November, 1881; for 5 years.

Claim.—1st. A brake consisting of a fixed bed H and a reciprocating beater J so constructed and operated that for each blow of the beater, there will be but one fracture of the fibrous stalks. 2nd. The combination of feeding rollers G G with a brake consisting of a bed H and beater J constructed and operating on the fibrous plants. 3rd. The combination of feeding rollers G G and a brake consisting of a bed H and beater J constructed and operating on fibrous plants, with the delivering rollers G G. 4th. The combination of the feeding rollers G G, stationary bed H, reciprocating beater J and a scutching cylinder B having a series of blades a a.

No. 13,663. Improvements on Children's Carriages. (*Perfectionnements aux voitures d'enfants.*)

Enoch Ziegler and Benjamin H. Ziegler, Berlin, 10th November, 1881 for 5 years.

Claim.—The construction and application of the spring I to the body of the perambulator, which is on a lever principle and not heretofore used in the same form in perambulators, and so attached to D and E that, whether carrying a light or heavy weight, the same motion is attained by moving hanger E backward or forward on block E. The application of coil spring which, on the same lever principle, gives the motion described in the mode of attachment of push handle to the perambulator as shown by fixtures A B C and the simplicity by which handle is removed from perambulator, making it not only a perambulator for out-doors but also a child's cradle for use in-doors without inconvenience in small rooms. The simplicity of mode of letting down and putting up back of seat in perambulator, by means of hook G and catch H, for the purpose of making the perambulator a sleeper.

No. 13,664. Improvements in Artificial Stones. (*Perfectionnements dans la pierre artificielle.*)

James H. Thorp, Baltimore, Md., U. S., 10th November, 1881; for 5 years.

Claim.—1st. A block, slab, or other artificial stone, composed of a face plate or shell of porcelain, or its equivalent, and a backing or body of a suitable composition united thereto. 2nd. An artificial stone consisting in a body composed of sand and lime or cement set with a solution of shellac, glue, borax, alum and sal soda, and having a facing of porcelain or its equivalent. 3rd. An artificial stone slab, or other article having a chamfered or dished face-plate of porcelain or its equivalent. 4th. An artificial stone having one or more wires embedded therein and adapted for connection, to bind the ties of stones together or to the beams. 5th. In combination with an artificial or natural stone, a partition plate D adapted for insertion between the tier of stones to prevent the entrance of moisture. 6th. As a new article of manufacture, a face-plate for artificial stones consisting of a shell of porcelain or its equivalent, having a glazed exterior and an unglazed interior face adapted for the adhesion thereto of the plastic composition. 7th. The chamfered or dished plate A having glazed exterior and lugs or pins on its inner face, holding the body B, wires C or both.

No. 13,665. Improvements on Submarine Cable Grappels. (*Perfectionnements aux grappins pour les câbles sous-marins.*)

Hubert Kingesford, Halifax, N. S., 10th November, 1881; for 5 years.

Claim.—1st. The application of electricity to a grappel. 2nd. The arrangement of block e, plunger d, pin c, spike f, contact plate, g and connecting wires h, in combination with a grappel.

No. 13,666. Improvements on Process for Treating Liquids or matters Dissolved or Suspended in Liquids, and in Effecting the Inter-action therewith of Gases or Vapours for Promoting various Chemical and other Operations, and on Apparatus Therefor. (*Perfectionnements au procédé de traitement des liquides ou des matières en dissolution ou en suspension dans les liquides et, avec l'action simultanée du gaz ou des vapeurs, pour aider diverses opérations chimiques et autres, et aux appareils pour cet objet.*)

John Storer, Glasgow, Scotland, 10th November, 1881; for 5 years.

Claim.—1st. The system of treating liquids or matters dissolved or suspended in liquids, and of effecting the interaction therewith of gases or vapours for promoting various chemical and other operations, wherein the liquids or matters are subjected to the action of one or more propellers or pulverizers driven at a sufficient velocity to beat the gases or vapours into the liquid, and produce their minute pulverization and admixture with liquid. 2nd. The improved modifications of apparatus, when applied for effecting the interaction of gases or vapours with liquids, or with matters dissolved or suspended in liquids, and for thereby promoting chemical and other operations.

No. 13,667. Improvements on Pomades. (*Perfectionnements aux pommades.*)

Rémi Prud'homme, St. Thomas d'Alfred, Ont., 10th November, 1881; for 5 years.

Claim.—A composition of matter composed of vasoline, medulloe, ossium bovis, olei ricini, acidi gallici, balsami peruviani, olei caryophylli and camellae.

No. 13,668. Improvements on Explosive Compositions. (*Perfectionnements aux composés explosibles.*)

Silas R. Divine, Lock Scheldrake, N. Y., U. S., 10th November, 1881; for 15 years.

Claim.—A solid ingredient, such as chlorate of potash and a liquid ingredient, such as nitro-benzole, mechanically united in the proportions of from three to four and one sixth parts of the solid ingredient to one part of the liquid ingredient.

No. 13,669. Improvements on Blasting and Blasting Cartridges. (*Perfectionnements dans le forage et les cartouches des mines.*)

Silas R. Divine, Lock Scheldrake, N. Y., U. S., 10th November, 1881; for 15 years.

Claim.—1st. Preparing an explosive compound from an in explosive solid ingredient, such as crushed or powdered chlorate of potash, and an in explosive liquid ingredient such as nitro-benzole, by depositing prescribed quantities of the solid ingredient in cylindrical cartridges or envelopes made of cloth, paper or other porous material, of diameters corresponding to the diameters of the drill-holes in which the explosive is to be employed, and in immersing the envelopes containing the solid ingredient in the liquid ingredient, or otherwise saturating the solid ingredient and its envelope with the liquid ingredient, preparatory to depositing the cylindrical envelope or cartridge in the drill hole, and igniting it with an exploder or by any other of the usual means. 2nd. The improved blasting cartridge, which consists of a cylindrical cartridge or envelope made of cloth, paper, or other porous material, containing a solid substance, such as crushed or powdered chlorate of potash or its equivalent which, together with its envelope, is saturated with a liquid, such as nitro-benzole or its equivalent.

No. 13,670. Machine for Cutting off Gelatine Capsules. (*Machine d'écouper les capsules en gélatine.*)

Frederick A. Hubel, Detroit, Mich., U. S., 19th November, 1881. (Extension of Patent No. 9,625.)

No. 13,671. Machine for Cutting off Gelatine Capsules. (*Machine d'écouper les capsules en gélatine.*)

Frederick A. Hubel, Detroit, Mich., U. S., 11th November, 1881. (Extension of Patent No. 9,625.)

No. 13,672. Improvements on Fire-Escapes. (*Perfectionnements aux sautoirs d'incendie.*)

Robert Bustin, St. John, N.B., 11th November, 1881: for 5 years.

Claim.—1st. The combination, with the block having the cleat *L* attached and the lower hook *P*, of the flexible connected grappling hook *C*. 2nd. In combination with the block *A* and lower hook *P*, the flexibly connected grappling hook *C*, and rope *W* provided with the grappling hook *X*.

No. 13,673. Art of Manufacturing Calendars. (*Art de faire les calendriers.*)

John Cussons, Glen Allen, Va., U. S., 11th November, 1881: for 5 years.

Claim.—1st. Printing sheets of tablet-forms for each month, each sheet having a number of tablet pages for the same month, gathering the sheets in stacks or pads, each having one sheet for each month, sewing the sheets together on lines along the heads of the rows of pages, passing said stacks or pads between compression rollers and finally slicing said stacks or pads into separate tablets. 2nd. A tablet calendar composed of a backing card or board and a tear off calendar-tablet composed of leaves sewed together, the back leaf being formed of a material superior in strength to, or capable of resisting a greater tearing strain than the others, and cemented or pasted to the backing card or board.

No. 13,674. Improvements on Sliding Door Hangers. (*Perfectionnements aux ferrures des portes en coulisse.*)

Samuel Selden, Erie, Penn., U. S., 11th November, 1881: for 5 years.

Claim.—1st. A sliding door having a hanging device consisting of a sheave by which the door is suspended, and a stud forming the axis of said sheave attached to said door on the side thereof next the wall of the building, by being socketed in a hole in the door below the top of the same, thereby bringing the sheave and track between the door and the wall. 2nd. A sliding door having a hanging device consisting of a sheave by which the door is suspended, and a stud forming the axis of said sheave attached to said door on the side thereof next the wall of the building below the top of the same, thereby bringing the sheave and track between the door and the wall. 3rd. In a sliding door hanging device, a stud forming the axis of the sheave attached to the side of the door next the wall of the building, in combination with the sheave and the track thereof, placed between said door and the wall of the building. 4th. In a door hanger, the combination of the following elements, a sheave *W*, the stud *H* with flange *h*, and a journal for the sheave (washers *E* and *J* and bolt and nut *D D*) and means for attaching the same to the door.

No. 13,675. Improvements on Cotton and Hay Presses. (*Perfectionnements aux presses à coton et à foin.*)

Benjamin H. Tyson, Wilson, N. C., U. S., 11th November, 1881: for 5 years.

Claim.—1st. A swinging box fan, an upright cotton and hay press composed of a permanent section and a vertically adjustable lower section. 2nd. A swinging box for an upright cotton and hay press composed of a permanent upper section and a vertically adjustable lower section, constructed with removable sides and ends. 3rd. The combination of the fixed bed, and one or more swinging boxes having permanent upper sections, and vertically adjustable lower sections.

No. 13,676. Improvements on Skates. (*Perfectionnements aux patins.*)

Gottfried Klotz, Dresden, Germany, 11th November, 1881: for 5 years.

Claim.—1st. The specially and peculiarly shaped form of the nose *d* of the cheek, the said cheek being made so as to turn round its joint. 2nd. The manner by which the large draw-plate is guided by the grooves *l* of the sole frame. 3rd. The peculiar manner by which the play of the spring *o* is limited, the hole *q* in the projection *p*. 4th. The peculiar form of the sole frame *C* and its increased strength, which is obtained by forming it hollow by the pressure of a stamp, by enlarging the two side pieces *a* of the eye of the turning points, and by combining with it the guiding grooves *k* of the sole catchers *J*.

No. 13,677. Improvements on Faucets.(*Perfectionnements aux robinets.*)

Charles Whittaker, Chicago, Ill., U. S., 11th November, 1881. for 5 years.

Claim.—1st. In a hot and cold water graduating faucet, a single chamber provided with both hot and cold water inlets, and one or more outlets, which inlets are respectively provided with stoppers, connected with and adapted to be operated by a single handle. 2nd. An index plate *O* provided with words or signs to indicate the proper places of adjustment of the handle for stopping the flow of water, or for providing a flow of hot, cold or temperate water. 3rd. The cam *J* forming three distinct planes, one horizontal and two inclined, conversely arranged, as connected with the handle and hot and cold water

valves or stoppers, said cam being adapted to move said stoppers both simultaneously and alternately in opposite directions, or retain them both at the same time in a closed position. 4th. The combination of the case *A*, upward extending tube *R*, spout *P*, stop cocks *S* and *T*, said stop cocks being adapted to change the course of the steam from a downward to an upward direction, or inversely in the opposite direction. 5th. In faucets, the combination of the slides *L L*, anti-friction rollers *h h h*, and cam *J*. 6th. The combination of index plate *O* having words "hot" and "cold" printed thereon both at one side of the centre above the respective hot and cold water valves, stem *M*, handle *N*, cam *J*, slides *L L*, valve rods *F* and *G*, stoppers *B* and *E*.

No. 13,678. Improvements on Feed Water Regulators. (*Perfectionnements aux régulateurs de l'eau d'alimentation.*)

Silas C. Salisbury, New York, N.Y., U. S., 11th November, 1881. for 5 years.

Claim.—1st. Combined with a steam generator, a balanced cone valve transverse to the post of the steam pipe, whereby steam passes to operate the feed pump, and a controlling lever fulcrum and float governed by the height of water in the generator. 2nd. A steam generator and feed pump connected therewith, to supply said generator with water, combined with mechanism automatically controlled by the height of the water level to govern the quantity of steam supplied to said feed pump, and thereby make the water feed dependent upon, and controlled by the quantity of water being evaporated. 3rd. A lever within the boiler pivoted to a fulcrum attached to the shell of the boiler, and provided with a controlling float at one end of said lever, and an automatic valve at the other end also within the boiler, to control the escape of steam to the feed pump, combined with a stem extending from said valve through the shell of the boiler, whereby said valve may be moved from the outside either to open or close said valve independent of the float. 4th. A lever within the boiler pivoted to a fulcrum attached to the shell of the boiler, and provided with a controlling float at one end, an automatic valve at the other end, also within the boiler, and a stem extending from said valve through the shell of the boiler, combined with a counterpoise spring or weight, whereby the drop of the float and movement of the valve may be assured and sticking effectually prevented. 5th. A bench of boilers coupled together, and a feed pump and pipe common to them all, a valve in the steam pipe which supplies steam to the pump controlled automatically, combined with valve *M* in said feed pipe also automatically controlled, whereby the action of the pump may be controlled by the gross evaporation in each boiler separately. 6th. Combined with a steam generator, a balanced cone valve *D* transverse to the post of the steam pipe *B*, whereby steam passes to operate the feed pump, and a controlling lever and float governed by the height of water in the generator.

No. 13,679. Improvements in Ore Grinding and Amalgamating Machines.(*Perfectionnements aux machines à écraser et amalgamer les minerais.*)

William E. Harris, New York, U. S., 11th November, 1881: for 15 years.

Claim.—1st. In an ore grinding apparatus, the combination of the shaft *H*, the upper grinding plate *J* attached to the shaft *H* having its lower side or face concave, and provided with V-shaped or angular grooves, and having a strengthening plate *K* attached to its upper side, the lower grinding plate *M* having radial grooves or slots in its face, the strengthening plate *P* attached to the grinding plate *M*, the trough *Q* provided with facing plates *T U*, and the ring plates *S* carried around by the spindles *a* connected with the plate *K*. 2nd. The upper grinding plate *J* made with V-shaped grooves *N* in its concave face. 3rd. The combination, with the upper grinding plate *J* having V-shaped grooves *N* in its concave face, and its supporting and driving mechanism, of the lower grinding plates *M* having radial grooves or slots *O* in its face, whereby the ore is crushed. 4th. The combination, with the grinding plates *J M* and the ring trough *Q*, of the spindles *a*, the ring plates *S* and the facing plates *T U*, whereby the grinding of the ore is completed. 5th. In an ore grinding and amalgamating machine, the combination, with the grinding plates *J M*, the ring grinding plates *S* and the trough *Q*, of the copper plates *c d*, whereby the ore will be finely ground and thoroughly amalgamated.

No. 13,680. Improvements on Apple Parers. (*Perfectionnements aux machines à peler les pommes.*)

George Gear, Bennington, N. H., U. S., 11th November, 1881: for 15 years.

Claim.—1st. The combination of the shaft having both a rotary and longitudinal movement, the crank *h* and their supporting frame adapted for engagement with said crank. 2nd. In combination with the spring actuated nut and the paring knife, the apple carrying shaft, ratchet threaded to adapt it to being pushed forward to bring the apple to the paring knife without turning the shaft, or withdrawing the spring actuated nut from the thread. 3rd. The combination of the spirally grooved shaft with the spring actuated latch nut for engaging said groove, the said latch nut being so mounted on its pivot, and all combined with the spring that the latter will hold the latch nut out of and into engagement. 4th. In an apple paring and coring machine, in combination with a core cutter, a core guard formed of a light strip of metal bent to nearly, but not entirely, encircle the core, whereby it may yield to permit the free passage of the core, while it prevents vibration of the apple carrying shaft. 5th. A slicing knife having its upper part turned outward to form a core cutter and curved to form a core guard, the cutting edge of said slicing knife being at a tangent to the circle formed by the core guard. 6th. In an apple parer, the knife holding frame extending along by the side of the knife bed and throat upon one side only, thereby forming the open throat. 7th. The knife holding frame having a laterally inclined throat open at one side, in combination with a knife curved or bent inward near its cutting edge. 8th. The frame having a laterally inclined throat open on one side, in combination with a knife

having its edges extending obliquely across the inclination of the knife, and throat slanting toward the open side of the frame. 9th. The frame extending along by the side of the knife only upon one side, and having the projection *m* on the outer bar of the frame and near the open end of the throat, whereby the latter is held away from the apple, so as to allow the parings to be freely discharged from the knife and to facilitate the traverse of the knife from end to end of the apple.

No. 13,681. Lamp Post. (*Poleau de reverberc.*)

William DeLany, Cobourg, Ont., 11th November, 1881. (Extension of Patent No. 6,761.)

No. 13,682 Improvements on Pulverizing and Grinding Machines. (*Perfectionnements aux machines à triturer et moulin.*)

John W. Hall, Montreal, (Assignee of Jerome J. Webster, Magog, Que., 11th November 1881. Extension of Patent No. 1221.)

No. 13,683. Improvements on Explosive Compounds. (*Perfectionnements aux composés explosibles.*)

The Nobel Explosive Company, Glasgow, Scotland (Assignee of Alfred Nobel, Paris, France), 11th November, 1881. (Extension of Patent No. 6,809.)

No. 13,684. Improvements on Explosive Compounds (*Perfectionnements aux composés explosibles.*)

The Nobel Explosive Company, Glasgow, Scotland (Assignee of Alfred Nobel, Paris, France), 11th November, 1881. (Extension of Patent No. 6,809.)

No. 13,685. Improvements on Skates. (*Perfectionnements aux patins.*)

William G. Rawbone and Joseph L. Rawbone, Toronto, Ont., 12th November, 1881; for 5 years.

Claim.—1st. In a skate having a front plate *B* to support the ball of the foot, and a heel plate *C* turned up to form a shoulder again of which the front edge of the heel butts, the combination of a clamp *F*, for the rear of the heel attached to, or forming part of a sleeve *E*, fitting a recess below the heel plate *C*, and connected to the back end of an adjusting rod *G*, the front end of which is screwed into a plate *J* having angular grooves cut in it to receive the pins *b*, for adjusting the side clamps *J*, which are pivoted on the bottom of the front plate *B*. 2nd. A skate having a rod *G* arranged to adjust the clamp *F*, for attaching the clamps to the boot sole, clamps *J* pivoted upon the bottom of the front plate *B* and provided with pins *b*, which pass through angular grooves in *I*, operated by the adjusting rod *G*.

No. 13,686. Improvements in Waggon Jacks. (*Perfectionnements aux chariots des wagons.*)

Absalom G. Smith, Hamilton, Ont., 12th November, 1881; for 5 years.

Claim.—1st. The base piece *A* operating in combination with the upright *B*. 2nd. The piece *C* attached to and operating in combination with the piece *A*. 3rd. The combination of the base piece *A*, upright piece *B*, lever handle *C* and hinge *D*.

No. 13,687. Improvements in Hydrants. (*Perfectionnements aux bornes-fontaines.*)

Samuel R. C. Mathews, Philadelphia, Pa., U. S., 12th November, 1881, for 5 years.

Claim.—1st. Two main or induction valves, situated one above the other, in combination with mechanism to raise or lower the upper valve, and mechanism to raise or lower the lower valve automatically, the movement of the two valves being in the same direction at the same time. 2nd. Two main or induction valves which are located one above the other, in combination with mechanism, whereby the lower valve is operated in such a manner that it opens a short time after the upper valve has left its seat in its downward motion, and closes a short time before the upper valve reaches its seat in its upward motion. 3rd. The combination of three valves, one main, one supplemental, and one waste valve, said valves being operated by suitable mechanism in such a manner that the supplemental valve always opens after the main valve opens, and closes before it closes, and that the waste orifice shall always be open when the main and supplemental valves are closed, and that it shall always be closed when the supplemental valve is open to any degree. 4th. A hydrant having two main or induction valves closing positively upon their seats, the lower opening and closing automatically, and free from oscillation with respect to the valve rod or its attachments. 5th. A supplemental or auxiliary valve *H*, to allow the hydrant to be taken up without shutting off the water from the district, said valve being made to open automatically with the main valve *F* by a positive motion communicated through the valve rod *E*, to which the main valve is attached, and closing firmly against its seat *W*, when the main valve *F* is closed, said supplemental valve being entirely separate and disconnected from said main valve and its rod. 6th. A supplemental valve *H* arranged in respect to a waste orifice *O*, its valve *N* and main valve *F*, in such a manner that the waste orifice can be covered before the supplemental valve is opened, and the supplemental valve entirely closed before the waste orifice is opened, said valve being connected to, and operating with the main valve *F* and independently of the supplemental valve *H*, preventing waste of water at the time of opening and closing, or when the supplemental valve is but partly open to allow of but little flow of water. 7th. The combination of nut or head *A*, provided with centering hole or cavity *b* secured to the supplemental valve *H*, and tapering or centering pins *G* secured to the main valve *F*, working together for centering and steadying the valve *H*, and preventing the tumbling or vibration at the time of opening and closing, and also preventing concussion or water ram from too sudden closing of valve. 8th. The cy-

linder *J* with its rod *I* and spring *M*, in combination with valve *H* and its seat. 9th. A supplemental valve *H* and its seat *W*, in combination with mechanism to open said valve in the act of opening the main valve, and mechanism which automatically closes said supplemental valve before the main valve closes. 10th. A valve rod attached to, and operating a waste valve, in combination with an induction valve which is entirely separate and distinct from said valve rod or waste valve, all operating in such a manner that the waste orifice is always closed by its valve before the induction valve is opened, and the induction valve is always closed before the waste orifice is opened. 11th. The combination of a main valve adapted to be removed from its valve rod, with a supplemental valve and suitably raising mechanism, the valve rod acting to depress or open the said supplemental valve during the act as in the main valve, for the purpose of performing the function of the main valve should the same be removed from its rod for repairs, thereby allowing the hydrant to be used during such repairs.

No. 13,688. Improvements in Hay-Lifters. (*Perfectionnements aux monte-foin.*)

Charles E. Friel, Fredericton, N. B., 12th November, 1881; for 5 years.

Claim.—The solid joint *F* as affixed to the frame at *k*, the friction bar *E*, the main slide *D*, with the slots *c* and *d*, and the slotted lever *B*, in combination with the rivets *a d e f g k*.

No. 13,689. Improvements in Electro-Magnetic Motors. (*Perfectionnements aux moteurs électro-magnétiques.*)

John D. Kiely, Toronto, Ont., 12th November, 1881; for 5 years.

Claim.—1st. The combination of an endless armature belt, fixed magnets connected in electric circuit, and devices for closing the circuit to magnets in succession. 2nd. In magnetic motors, the combination of the double or compound magnets *C*, and endless armature belt provided with armatures.

No. 13,690. Improvements on Saw Mill Dogs. (*Perfectionnements aux clameaux des scieries.*)

George F. Knight, Hekesville (Ohio), U. S., 12th November, 1881; for 5 years.

Claim.—The combination with the adjustable dog *D*, the slide bar *B*, and an operating lever and column of the slide head *C*, having slotted way *a* and the offset slide way *a'*, at right angles thereto, and the eccentric lever fastening *a*.

No. 13,691. Improvements on Nut Locks. (*Perfectionnements aux arrête-écrous.*)

Edmund J. Darby, James Slater, Benjamin Donaldson and William Anderson, Ottawa, 12th November, 1881; for 5 years.

Claim.—The combination of inner plate *F* having slitted tongues *K*, and plate *H* having slots *J* and segmentally notched ends *I*, the tongues bending over plate *H*, in slots *J*.

No. 13,692. Improvements in Sheep's Racks. (*Perfectionnements aux râteliers des bergères.*)

Frederick A. North, Easton, Mich., U. S., 12th November, 1881; for 5 years.

Claim.—1st. A feed rack provided with a series of side openings, the two longitudinal V shaped troughs located wholly within the rack, and the elevated central walk *D* located between the troughs and serving also as a portion of the floor of the rack. 2nd. In combination with the body having a series of side openings, the guards *K*, the suspending links, one or more of which have their ends extended upward as shown, and the suspending hooks *L*. 3rd. In combination with a feed rack, having a series of feed openings in its sides, the guard boards *K* pivoted to the lower ends of pendant links *J*, and movable vertically by an endwise action.

No. 13,693. Improvements in Rotary Pumps. (*Perfectionnements aux pompes rotatoires.*)

Abraham S. Clark, Turner's Falls, Mass., U. S., 12th November, 1881; for 5 years.

Claim.—1st. The combination, with the pistons thereof, of a casing made adjustable on the pistons. 2nd. The combination, with the base *A* and the flanges *B* upon the side of the piston case *C*, of the screw dove tail pins *M* and the screw bolts *N*, whereby the said case can be adjusted upon the pistons as their bearings wear. 3rd. The combination, with the shaft *F* of the heads *H* having enlarged holes *G*, the stuffing boxes *O* having slotted flanges *P*, upon their inner ends, and the screw bolts *R*, passing through the flange slots *Q* into the heads *H*. 4th. The combination, with the base *A* having the outer bearings *J*, of the second or supplementary bearings *K*, turned on, or attached to the cross bar *L*, which is cast on, or secured to the base *A*.

No. 13,694. Improvements on Fish Hatching Apparatus. (*Perfectionnements aux appareils de pisciculture.*)

Oren M. Chase, Detroit, Mich., U. S., 12th November, 1881; for 5 years.

Claim.—1st. The combination of the glass vessel *A*, constructed upon curved lines and with an unperforated bottom, with a removable glass tube, the lower end of which is supported upon feet or lugs and is enlarged, whereby the water is discharged in a thin sheet, and compelled to follow the curvature of the bottom and sides of the vessel. 2nd. The combination with the glass vessel *A*, constructed upon curved lines and having an unperforated bottom, and provided with a glass tube, having its lower end enlarged and operating as described, of the rim *B* and the removable wire cloth screen *C*, resting upon said rim.

No. 13,695. Improvements on the Manufacture of Paper Pulp. (*Perfectionnements dans la fabrication de la pâte à papier.*)

David O. Francke, Korndal Molndal, Sweden, 12th November, 1881; for 5 years.

Claim.—1st. The process of manufacturing paper pulps from wood, wheat, maize, or other straw, or from other suitable vegetable fibre by subjecting it under heat and pressure to the action of acid calcium sulphite. 2nd. A new article of commerce in paper pulp, prepared by the action under heat and pressure of acid calcium sulphite on wood, wheat, maize or other straw, or other suitable vegetable fibre.

No. 13,696. Improvements in Stock Cars. (*Perfectionnements aux chars à bestiaux.*)

James Montgomery, Chicago, Ill., U. S., 12th November, 1881; for 5 years.

Claim.—1st. The upright or wall posts permanently secured to the outer side of the sills, or floor frame bars, by means of the metal socket pieces whereby greater strength is attained, and an inclosed space or car room of greater dimensions is secured than would be practicable by the usual construction. 2nd. The longitudinal feed bins at the top of the car having partitions separating the storing compartment from the feed chute compartment, the latter having an independent lid beneath a common lid which covers both compartments. 3rd. The longitudinal feed bins having the storing and feed chute compartments, separated by a longitudinal partition, the latter filling the entire space between the wall posts, and provided with valves at their bottoms, connected with a pivotal shaft for actuating them. 4th. The water and feed troughs arranged above, and removed from the car floor, and having the discharge openings or outlets in their bottoms, in combination with the spouted slides, whereby all in the same series can be simultaneously closed or opened, and their contents discharged at the sides of the car and clear thereof. 5th. The flexible partition strips permanently secured at their ends to fastening rods which project at one end beyond the edge of the strips, for separating them from the floor and from each other. 6th. The flexible strips M permanently secured at their ends to the fastening rods M, in combination with the retaining sleeves or sockets L. 7th. The slotted vertical sleeves or socket pieces L attached to the wall posts or sides of the car, for the reception and retention of the rods on the ends of the flexible partition strips. 8th. The socket pieces L made in a cylindrical or nearly cylindrical form, in combination with the projecting ends of the rods attached to the partition strips, for forming a pivotal or hinge connection of the strip with the side of the car. 9th. A stock car provided with rolling curtains arranged and operating as described, whereby the sides and ends of the car can be covered for protecting the stock. 10th. The disk or hand wheel F₂ provided with a series of perforations, and applied to the rock shaft for dumping the valves or feed troughs, either or both, in combination with the socket piece and retaining pin for holding said wheel and shaft at any desired adjustment.

No. 13,697. Improvements on Car Axle Boxes. (*Perfectionnements aux boîtes à graisse des chars.*)

Sumner A. Bemis, Springfield, Mass., U. S., 13th November, 1881; for 5 years.

Claim.—1st. The combination of the axle having no brass retaining collar of greater diameter than the bearing surface, with the box adapted to contain the axle and its bearings provided with a lug 3 projecting down inside, and a movable brass provided with a single stud as 2 projecting upward in a position to bear against said lug. 2nd. The combination, in an axle box for cars, of the box adapted to contain the axle, the housing for the same at the inner end of the box, a step on each side of the box to support the car spring, and two braces extending in different directions from each step, one to the box, and the other to the housing and made solid therewith. 3rd. The reversible brass provided with a stud to operate in connection with a lug projecting down from the axle box above, and formed with shouldered or perforated elongated ends. 4th. The combination, with the box adapted to contain the axle journal and the brass, of a housing provided with an interior vertical space for collection of liquids, and also a drainage hole leading therefrom to conduct away such liquids. 5th. The combination of the box adapted to contain the axle journal, and a cap or cover for said box provided with a recess to receive a bolt and bolt head, said box and the cap at the bottom of the recess being provided with an opening through which said bolt is inserted to secure said cap in place on the box. 6th. The combination of a sleeve on the inner end of the box or its housing, and surrounding the axle, a washer placed on said sleeve and a flange made on the side of the car wheel projecting outward and against said washer. 7th. The combination, with a socket made on the vertical side of the housing, or of the adjacent side of the pedestal of a car axle box, of a rubber spring adapted to be inserted into said socket and held in place by its walls, whereby said spring may be compressed between the housing and the pedestal by the side motion of the car.

No. 13,698. Improvements in Wood Bending Machines. (*Perfectionnements aux machines à plier les bois.*)

Dennis N. Webster, Geneva, Ohio, U. S., 13th November, 1881; for 5 years.

Claim.—1st. A scythe-smuth forming machine having horizontally curved recesses to receive the blank and levers to force the blank into the form described by the curves, and having a removable die with a vertically curved recess, corresponding with the horizontal curves, into which the partially formed smuth is forced by proper means, the two operations imparting both horizontal and vertical curves to the smuth. 2nd. The combination of the frame E, and bearings F, the link-rods e and rods e and springs e², with the bearing A, levers B, C, slot x and mould D d.

No. 13,699. Improvements in Ice-Boat Ploughs. (*Perfectionnements aux charrires des brise-glace.*)

Samuel Richards, Philadelphia, Penn., U. S., 13th November, 1881; for 5 years.

Claim.—1st. The combination of an inclined flat platform with the bow of a steamboat, when the bow itself is employed as the dividing wedge for directing the raised ice aside on the top of the adjacent ice. 2nd. The combination of the system of steam pipes, with the inclined platform frame for forming an open platform freed from liability to be clogged by accumulation of ice thereon. 3rd. The under scores f f constructed respectively with two joints g and h working at right angles to each other, whereby the scores are expediently to maintain their cutting position when the boat is not on even keel. 4th. The double joints under scores f f, in combination with the loaded levers, by which the scores are kept in contact with the surface of the ice. 5th. The barbed endless chains o with their appliances for operating them, in combination with the system of pipes, placed on the inclined platform frame, for the purpose of starting the ice and facilitating its passage up the inclined platform, when the boat is stationary or moving forward slowly. 6th. In combination with the inclined platform, the floating adjustable platform n presenting a horizontal surface, to act as a rest for the ice, and prevent the ice from sliding forward under the first or floating ice ahead of the platform. 7th. The removable side additions b f for widening the inclined platform, the deflectors v w attached to the bow of the boat, in combination with the inclined platform b f for ejecting the raised ice a greater distance from the channel when required.

No. 13,700. Improvements on Car Starters. (*Perfectionnements aux impulsions des wagons.*)

Philip B. Shaw, (Assignee of Joseph Hill), Williamsport, Penn., U. S., 13th September, 1881; for 5 years.

Claim.—1st. The combination, with a car starter, of a checking device for preventing a retrograde movement of the car. 2nd. The combination, with the sleeve, the clutch, the clutch lever and the clutch ball, of the auxiliary ball for preventing a retrograde movement of the cars. 3rd. The ball for preventing the retrograde movement of the car in combination with the mechanism for throwing such ball out of engagement, said mechanism being locked by the draw bar and automatically released when the draw bar is pulled out. 4th. The combination, with the auxiliary ball, of the pin, yoke, angled levers, chains, rods and pedal for throwing such ball out of engagement.

No. 13,701. Improvements on Milk Coolers. (*Perfectionnements aux garde-lait.*)

David N. Calkins, Rochelle, Ill., U. S., 13th November, 1881; for 5 years.

Claim.—1st. The combination, with a water chamber and milk cans, of a cover having a depending rim, which extends into the water chamber, a ventilating tube extending above the cover and below the top of the cans, and a tube which conducts the waste ice water from the surface of the cover into the water chamber. 2nd. The combination, with the water chamber and milk cans, of a cover having an inwardly extending rim and provided with a pipe adapted to convey the waste ice water from the surface of the cover, a rubber plug or stopper adapted to fit said opening, a ventilating tube passing through said cover to a point below the top of the cans, and an overflow pipe extending nearly to the bottom of the chamber. 3rd. The combination, with a water chamber and a cover provided with ventilating and waste water tubes, of a supplemental cover provided with a central upright cylinder, having an independent bottom on which the ice rests, and perforations for the escape of ice water from the main cover when the parts are in position. 4th. The combination, with a main cover, of a supplemental cover provided with an upright chamber adapted to receive ice, said chamber being provided with an air space extending about its sides. 5th. The combination, with a main cover, of a supplemental cover provided with a depending flange about its sides, which rests upon the main cover and forms a water space between the two covers. 6th. The combination, with the water chamber, of a rack removably secured to the bottom thereof, and provided with side pieces adapted to prevent the cans from being placed too near the sides, so as to interfere with the closing of the top, and catches with which tongues on the milk cans engage and are held securely thereby. 7th. The combination, with a cover hinged to the water chamber and provided with a rear rim, which catches the surface water when the cover is raised, said cover having its central portion provided with a depressed ice receptacle which fits on the milk can top, of a loose supplemental cover, resting on the hinged cover and provided with a upright chamber in line with said ice receptacle. 8th. The combination, with the main cover having a pipe secured thereto for carrying off the waste ice water, and a supplemental cover having an opening therein, which registers with the waste pipe in the main cover, of a rubber plug or stopper having an elongated handle by which it can be passed through the supplemental cover and close the waste pipe without removing either cover.

No. 13,702. Improvements in Presses for Baling Hay, Cotton, &c. (*Perfectionnements aux presses à empaqueter le foin, le coton, &c.*)

Preston C. Hudson, Fort Dodge, Iowa, U. S., 13th November, 1881; for 5 years.

Claim.—1st. In a revolving cylinder, the combination of the piston m n, the heads k o, and the hinges a b. 2nd. The combination of the lock spring d, the hook c, and the spring e. 3rd. The combination of the disk h, the piston f, the lever g and the weight o. 4th. In a baling press, the combination of shaft h fly wheel H, piston E, wheel F, shaft e, cranks d, connecting rods c, cross bar i, compressing piston z k. 5th. The combination of the spools a and a², wires and supports p and p. 6th. The combination of the shaft s, bevel wheels x r, pinion y and gearing p. 7th. The piston head k, having its sides concave, whereby friction at the mouth of bale chamber is relieved. 8th.

The combination of shaft *b*, pinion *E*, fly wheel *H*, gear wheel *F*, shaft *c*, cranks *d*, connecting rods *e*, cross bar *l*, piston *z*, head *k*, press chamber *P*, revolving cylinder *G*. 9th. The compressing piston *z* bearing a screw of sufficient length, and a nut through the centre of a balance wheel or hand wheel, so that the compressing piston may be made longer or shorter quickly at pleasure. 10th. The combination of the compressing piston *z*, upon the end of which is cut a long heavy thread, the wheel *z*, the centre of which forms a nut fitting the screw on the piston, the hand wheel and shaft *a* and mitre or bevel gear all within suitable frame work. 11th. A self-binding baling press in which the binding is done by means of wires or other suitable binding material twisted together by revolutions of the bale. 12th. A self binding press in which the binding wires or other suitable binding material are gradually pressed forward into the bale chamber, by the commodity to be bound, and are guided in their proper place, along the sides of the bale, by means of the end of the bale, and fixed tubes or supports, fastened to the stationary feed box at the mouth of the bale chamber. 13th. A horizontal revolving bale chamber, one or more sides of which is or are hung upon hinges and from which the bale drops by gravity, while the chamber revolves. 14th. The combination of the disk *h*, and the piston and hollow journal.

No. 13,703. Improvements on Syringes.

(*Perfectionnements aux seringuees.*)

James A. Grant, Ottawa, Ont., 14th November, 1881; for 5 years.

Claim.—1st. An elastic bulb syringe provided with corresponding sleeve joints at both ends of the bulb, consisting substantially of the tubular stems, *D D*, secured to valved collars, *E E*, secured to bulb *C*, and ferrules *F F* inserted in the tubes *A* and *B*, the stems slipping into the ferrules. 2nd. As an improvement in elastic bulb syringes, the combination, with one of the tubes, of the gag *I* and ferrule *F*.

No. 13,704. Improvements on Feather Renovators.

(*Perfectionnements aux rafraichisseurs à plumes.*)

John J. Bonney, Fulton, N.Y., U.S., 14th November, 1881. (Extension of Patent No. 8,771.)

No. 13,705. Improvements on Feather Renovators.

(*Perfectionnements aux rafraichisseurs à plumes.*)

John J. Bonney, Fulton, N.Y., U.S., 15th November, 1881. (Extension of Patent No. 8,771.)

No. 13,706. Improvements in Vehicles.

(*Perfectionnements dans les voitures.*)

Pierre Dausereau, Montreal, Que., 17th November, 1881; for 5 years.

Claim.—1st. The combination of a top divided into rigid parts and hinged together, one of the said parts secured on posts *C*, and the whole of the parts turning back with the said posts. 2nd. The combination of a top divided into rigid parts, and arranged to turn completely *b*, *a* with back turn down posts *C* and front turn down posts *H*.

No. 13,707. Improvements in the Manufacture of Files.

(*Perfectionnements dans la fabrication des limes.*)

Martin A. Howell, jr., Chicago, Ill., U. S., 17th November, 1881, for 5 years.

Claim.—1st. The process which combines the decarburization of cast iron blanks, for the purpose of cutting with the subsequent recarburization, for the purpose of hardening and tempering. 2nd. The combined process of surfacing, cutting, recarburizing and hardening of decarburized cast iron blanks.

No. 13,708. Improvements on Wood Grinders.

(*Perfectionnements aux piles de cylindres.*)

Nicolaus Kaiser, Grellingen, Switzerland, 17th November, 1881; for 5 years.

Claim.—1st. A wood pulp machine with a vertical stone, in combination with one or more devices by which the wood is, in one or several places, brought to bear against the said stone on one or both sides of the latter. 2nd. A wood pulp machine with a vertical stone, in combination with one or more wood receivers, situated at the side or sides of the stone. 3rd. A wood pulp machine with the vertical stone, in combination with the receivers, the rack *b*, the pinion *a*, and the weight wheel *g*. 4th. A wood pulp machine with the vertical stone, in combination with the side sharpening apparatus *l*.

No. 13,709. Improvements in Paper Packages.

(*Perfectionnements aux sacs en papier.*)

Henry C. Crocker, Milwaukee, Wis., U. S., 17th November, 1881; for 5 years.

Claim.—1st. A package consisting of a filling of material, a folded paper wrapper inclosing the same and having a superficial coating of paraffine, for both hermetically closing the pores and hermetically sealing the joints, and an exterior wrapper inclosing this. 2nd. The method of putting up coffee, spices and other materials injuriously affected by air or moisture, which consists in placing them in a paper wrapper, fastening the seams and folds with paste and hermetically sealing the package, and the seams and interstices by immersion in melted paraffine.

No. 13,710. Improvements in Machinery for Gold Mining.

(*Perfectionnements aux appareils d'exploitation des mines d'or.*)

Thomas Potter, Victoria, B. C., 17th November, 1881; for 5 years.

Claim.—1st. The combination of the barge *A*, current wheels *B B*, buckets *C* and hoisting gear *F*. 2nd. The dredging bag *I*.

No. 13,711. Improvements in Horse Collars.

(*Perfectionnements aux colliers de cheval.*)

Sylvester J. Bowers, Cananlaigua, N. Y., U. S., 17th November, 1881, for 5 years.

Claim.—1st. The coupling sections *A B* having ears *b* connected to the collar between the rolls thereof, and secured by rivets or other similar means. 2nd. The coupling sections *A B*, having a dovetail groove *c* and tongue *d* running transversely or crosswise of the contacting ends of the sections, the latter also having ears *b* adapted to be connected to the collar between the rolls thereof. 3rd. The sections *A B*, having bridges *e* to form a hame strap loop when the sections are coupled together. 4th. The two coupling sections *A B*, each of which has an angle bar *f*, so that, when the sections are coupled together, the two angle bars will form a guard for the breast pole or hold back strap.

No. 13,712. Improvements on Iron Harrows.

(*Perfectionnements aux herces en fer.*)

Joseph Maunder, Little Britain, Ont., 17th November, 1881; for 5 years.

Claim.—1st. The peculiar and novel method of attaching the teeth *b*, to the bulls *F*. 2nd. The method of attaching and fastening the hinge bars *c* to the bulls *F*, as described.

No. 13,713. Improvements on Hatchway Doors.

(*Perfectionnements aux panneaux d'ecoutilles.*)

Josephus C. Chambers, Cincinnati, Ohio, U. S., 17th November, 1881; for 15 years.

Claim.—The combination with a pair of sliding doors, or shutters *3* *3a*, of elevator brace *65* *15* *16* *17* *18*, tappet *14*, sliding bar *11*, spring *13*, hooks *12* *12* and studs *10* *10*.

No. 13,714. Horse Shoe Nail Machine.

(*Machine à clou à cheval.*)

Joseph M. Laughlin, Boston, Mass., U. S., 17th November, 1881, (Extension of Patent No. 6,801.)

No. 13,715. Improvements on Washing Machines.

(*Perfectionnements aux machines à laver.*)

Asa L. Burke, Orangeville, Ont., 18th November, 1881; for 5 years.

Claim.—1st. In a washing machine having a semi-circular metallic bottom, the combination of a detachable auxiliary casing having a concave bottom, corrugated to form a rubbing surface for the clothes. 2nd. An outer box arranged to carry all the washing and wringing attachments, and a detachable auxiliary casing for containing the clothes and washing material, the combination of sliding end pieces detachably arranged within the inner casing, for the purpose of enabling the dimension of the same to increase or decrease as required. 3rd. An outer box arranged to carry all the washing and wringing attachments, a detachable auxiliary casing, fitting within the outer box, and having open slatted ends forming handles for lifting the same, in combination with a plug passing through the outer box near its bottom, and extending through a hole in the inner casing, for the purpose of holding the same in position, and at the same time plugging the passage way for the exit of the dirty water. 4th. A detachable auxiliary casing, the bottom of which is held in position by screw nails and presents a smooth semi-circular surface on its exterior, while its interior has corrugations formed by V-shaped projections separated by flat strips about the same width as the base of the projections, the combination of an open semi-circular rubbing block, pivoted within the casing and formed by V-shaped slats separated by cross bars cut away to leave open spaces on either side of the V-shaped projections. 5th. A washing machine composed of a semi-circular weighted rubber, pivoted within a box containing a detachable auxiliary casing having a concave corrugated bottom, to form a rubbing surface for the clothes, acted upon by the rubber, a wringing attachment secured to the end of the washing machine, in combination with a receiving box situated on the outside of the machine, immediately below the wringer, and so attached to the box that it can be unhooked therefrom. 6th. The combination, with a washing machine composed of a semi-circular weighted rubbing block pivoted within a box having V-shaped slats arranged on its semi-circular bottom, of an adjustable wringer situated at one end of the box and provided with a hinged receiving box. 7th. A wringer supported on standards attached on the end of a washing machine the hooked bolts *J*, hooked into the block *H* planted on the end pieces *I*, in combination with the pressure bar *K*, spring *L*, and adjustable blocks *F* holding the rollers *E*.

No. 13,716. Improvements on Grooved Boards for Retaining Plaster.

(*Perfectionnements aux planches cannelées pour crépir.*)

Samuel Melville, Portage La Prairie, Man., 18th November, 1881; for 5 years.

Claim.—The improved art or method of working dovetail grooves or channels in boards, longitudinally with the grain of the wood by grooving channels of rectangular form by ordinary means, and then enlarging the same by cutting away the sides of the grooves to incline inwardly by a tool traversing the groove and following the primary cutter, whereby the grooves are formed at one passage of the board through the machine.

No. 13,717. Improvements in Refrigerating Apparatus.

(*Perfectionnements aux appareils réfrigérants.*)

Henry D. Cogswell, San Francisco, Cal., U. S., 18th November, 1881, for 10 years.

Claim.—1st. The method for refrigerating water to be used for cooling purposes, consisting of a tank or chamber having a supplemental

floor of iron pipes, through which the water flows under pressure, said floor being covered with ice. 2nd. The tank or chamber A with its flooring of layers of pipes B to receive a body of ice, while water is flowing through said pipes under pressure. 3rd. The cooling or refrigerating tank or chamber A with its layers of pipes B, and the connecting pipe E, in combination with the fountain with its faucet F, receivers G H and waste pipes. 4th. The cooling or refrigerating chamber A with its layers of pipes J fixed within the tank or receptacle, and the connecting pipe E and regulating cocks. 5th. In combination with the cooling or refrigerating tank A with its pipes B, and the connecting pipe E, the chamber or closet M with its hollow shelves N adapted to receive the water from the pipe and the connecting pipes O and egress pipe. 6th. In combination with the refrigerating or cooling chamber A with its water conveying pipes B and the pipe E, the chamber P with its layers of pipes Q adapted to receive and circulate the water, the fan or air forcing apparatus R and the exit air conveying pipe S.

No. 13,718. Improvements on Safety Valves.

(*Perfectionnements aux soupapes de surclé.*)

Henry G. Ashton, Boston, Mass., U. S., 19th November, 1881; (Extension of Patent No. 6,868.)

No. 13,719. Improvements on Locomotives.

(*Perfectionnements aux locomotives.*)

Henry G. Ashton, Boston, Mass., U. S., 19th November, 1881. (Extension of Patent No. 6,874.)

No. 13,720. Process for Treating Substances with Hydro-Carbons.

(*Procédé de traitement des substances au moyen des hydro-carbures.*)

Eleanor F. Adamson and William B. Adamson, Philadelphia, Penn., U. S., 19th November, 1881; (Extension of Patent No. 6,815.)

No. 13,721. Apparatus for Heating Air and Gases.

(*Appareil pour chauffer l'air et les gaz.*)

Thomas Whitwell, South Stockton, Eng., 19th November, 1881; (Extension of Patent No. 6,796.)

No. 13,722. Manufacture of Artificial Stone.

(*Fabrication de la pierre artificielle.*)

Samuel McCammon, Gananoque, Ont., 19th November, 1881. (Extension of Patent No. 6,799.)

No. 13,723. Improvements on Brushes.

(*Perfectionnements aux pinceaux.*)

John L. Whiting, Boston, Mass., U. S., 19th November, 1881. (Extension of Patent No. 6,782.)

No. 13,724. Improvements on Sleighs.

(*Perfectionnements aux traîneaux.*)

James E. Murphy, Halifax, and Robert Angus, Truro, N. S., 20th November, 1881; for 5 years.

Claim.—1st. A sleigh or cutter provided with a folding seat, a portion forming part of the back of the cutter, and extensible slidingly therefrom and closing under the fixed seat of the cutter or sleigh. 2nd. A cutter or sleigh having a seat extensible from the rear and sliding under the fixed seat, said extensible seat consisting of the sliding portion E forming part of the back of the cutter, hinged seat and back F G supported by curved bars I hinged to the runners A and operating automatically to support the sliding portion E by bar H bearing on collars J and seat F by the ends of the bars.

No. 13,725. Improvements in Stock Cars.

(*Perfectionnements dans les chars à bestiaux.*)

James Montgomery, Chicago, Ill., U. S., 20th November, 1881; for 5 years.

Claim.—1st. The longitudinal metal girders *a* rigidly secured to the side wall posts, for the support of the removable joists which uphold the removable middle deck. 2nd. The longitudinal girders *a* for the support of the removable middle deck provided with the hinged extensions *a* crossing the doorways, and adapted to be swung out of the way when the middle deck is not in use. 3rd. The longitudinal girders *a* in combination with the removable joists B, which support the removable middle deck, said joists being provided with notches *b* engaging with the girders *a* and with shoulders *b* abutting against the side walls of the car, thereby uniting and stiffening said walls. 4th. The removable joists B having their notched and shouldered end *b* faced with metal on their wearing faces. 5th. The removable padded joists, for the support of the removable middle deck, in combination with side supporting bars and suitable fastening devices, adapting said joists to be used as adjustable partitions for stalling the animals. 6th. The flooring forming the removable middle deck composed of hinged sections, the outer ones of which are hinged to and fold up against the side wall posts, the inner ones being hinged to said outer sections and folding up against the roof of the car. 7th. The cross ties E for uniting and stiffening the sides of the car provided with pendulous loops *e* for the reception of the removable flooring joists. 8th. The hinges which unite the sections of the folding middle deck to each other and to the wall posts, having the interlocking ears provided with elongated slots permitting play of the parts on the connecting pin.

No. 13,726. Improvements on Wire Fences.

(*Perfectionnements aux clôtures métalliques.*)

Salmon Thompson, Manson, The Iowa, U. S., 20th November, 1881; for 5 years.

Claim.—The combination, with the fence wire *a* provided with spurs *b* on each side of a barb, but not bearing on its faces of the sheet metal barb B having the angular recess *a'* and points *a'' a' a'*, and an orifice of larger diameter than the wire arranged above the centre of gravity of the barb, whereby the barb is loose upon the wire, and its weighted ends cause it to assume an upright position, when turned therefrom.

No. 13,727. Improvements on Barn and Stable Structures.

(*Perfectionnements aux constructions des granges et des étables.*)

James Beatty, Dawn, Ont., 20th November, 1881; for 5 years.

Claim.—The upright posts A, cross beams B, roof timbers C and hinged sides G, in combination with ropes E and pulleys E.

No. 13,728. Process and Apparatus for Smelting Iron Ores.

(*Procédé et appareil pour fondre les minerais de fer.*)

Thurston G. Hall and George H. Van Vleet, Buffalo, N. Y., U. S., 20th November, 1881; for 5 years.

Claim.—1st. The process of smelting ores and producing refined metal, by injecting an air blast and gas blast on the same level, and a simple air blast at a level below that of the combined air and gas blast. 2nd. The combination, with a blast furnace A and the chimney B, of an ordinary furnace C of a gas blower D having its gas inlet connected with the chimney B and having its discharge pipe connected with tuyeres leading into the hearth of the blast furnace, and an air blower K having its discharge pipe connected with suitable air tuyeres. 3rd. The combination, with a blast furnace A and the chimney B of an ordinary furnace C, of a gas blower D, an blower K and air and gas tuyeres *h h* arranged in two rows or tiers, one above the other, the gas tuyeres *h* in the lower tier being provided with slides *p*, whereby the flow of gas to these tuyeres can be regulated. 4th. The combination, with a blast furnace, of air and gas tuyeres *u o h h*, the gas tuyeres *h* being provided with slides *p*, whereby the flow of gas to these tuyeres can be regulated. 5th. The combination, with a blast furnace A, of the gas exit B of a generating furnace, of a gas conduit *d* and blowing apparatus B, whereby the gas is conducted from the generating furnace to the blast furnace and a surface cooler F provided with water supply and escape pipes *f f* and arranged in the gas conduit *d* between the generating furnace and the blowing apparatus, whereby the gas is deprived of its heat before it enters the blowing apparatus.

No. 13,729. Improvements on Injectors.

(*Perfectionnements aux injecteurs.*)

Emil Wohlerr, New York, N. Y., U. S., 20th November, 1881; for 5 years.

Claim.—1st. The water supply tube or pipe being branched or forked intermediately between the water regulating cock and the aspiration chamber of the injector, so as to form an annular chamber, in combination with the steam pipe extending through said chamber from the ejector steam valve to the ejector discharge nozzle so as to be separated from the water supply chamber by an intervening air space. 2nd. A branched or divided water supply pipe being cast in one piece with, and at right angle to the body of the injector and provided, in the branched water supply chamber and intermediately between the water regulating cock and the aspiration chamber, with a hollow chamber for the ejector steam pipe.

No. 13,730. Improvements in Hay Presses.

(*Perfectionnements aux presses à foin.*)

Peter Lord, Eusebe Mignault and Jean B. Vinet, Montreal, Que., 20th November, 1881; for 5 years.

Claim.—1st. The combination of the follower block provided with an operating device by which said follower block is moved, and having pin *l*, with bed block K and enclosing casing and doors. 2nd. The combination of the rakes E *l* with casing D and follower block L. 3rd. The combination of the ram H provided with follower block I, cables G P, segments of eccentrics V, levers A, lines and pulleys and blocks, bed block K, casing and doors.

No. 13,731. Improvement in Artificial Stone.

(*Perfectionnement dans la pierre artificielle.*)

Benjamin Durant, Waterloo, Eng., and John Martin, Montreal, Que., 20th November, 1881; for 5 years.

Claim.—1st. A body of sand, gravel, or other analogous material bound together and coated with steel or iron. 2nd. The consolidation of particles of steel or iron in solution with shingle, gravel, sand, or like material, and cement.

No. 13,732. Improvements on Suspenders.

(*Perfectionnements aux bretelles.*)

George H. Phelps, West Newton, Mass., U. S., 20th November, 1881; for 5 years.

Claim.—1st. The shoulder and back supporting suspenders composed of the back pieces *a b*, the shoulder straps adjustably connected therewith at each end and provided with ends *6*, buckles and supports, and end pieces *c* provided with button holes. 2nd. The back pieces *a b*, the shoulder pieces with their ends *4 5* adjustably connected therewith and provided with ends *6*, buckles, supports and cords *e*, provided with button holes, combined with the straps *f* secured at the back of the back pieces, and the cord *q* provided with button holes *12 13*. 3rd. The back pieces *a b*, the shoulder pieces with their ends *4 5* adjustably connected therewith, and provided with ends *6*, buckles, supports and cords *e* provided with button holes, combined with the strap *f* secured at the back of the back pieces, the cords *e* provided with button holes *12 13* and with the supporter *p q r*. 4th. The connected back pieces and their shoulder straps provided with ends and end pieces containing button holes, combined with an end piece containing button holes and supported at the back of the said back pieces.

No. 13,733. Improvements in Ploughs. (*Perfectionnements dans les charrues.*)

Peter M. Bawtinheimer, Rond'Écu, Ont., 20th November, 1881; for 5 years.

Claim.—The combination of a spoke A on the land side running from C to D, in combination with the wheel B.

No. 13,734. Improvements on Dynamo or Magneto-Electric Machines. (*Perfectionnements aux machines électro-dynamiques ou magnétiques.*)

Thomas A. Edison, Mento Park, N. J., U. S., 20th November, 1881; for 15 years.

Claim.—1st. In a dynamo or magneto electric machine, a magnetic circuit regulator consisting of means for varying within certain definite limits, the metallic mass of the yoke connecting the limbs of the field magnet. 2nd. The yoke of the field of force magnet, provided with a conical opening, in combination with a conical block adjustable in and out of such opening. 3rd. The method of regulating the generative force of a dynamo or magneto electric machine consisting in varying the intensity of the magnetic field in which revolves the induction bobbin or armature by varying within certain definite limits the mass of the yoke connecting the limbs of the field magnet. 4th. The combination of a magnet or magnets having polar extensions forming a magnetic field in which the induction bobbin rotates, an induction bobbin rotating within such field, and a magnetic bar or lever for shunting the lines of force away from or around the magnetic field. 5th. The combination of a magnet or magnets with polar extensions forming a magnetic field, an induction bobbin rotating in such field, a magnetic bar or lever for shunting the lines of force away from or around the magnetic field and adjustable to, or from the magnet or magnets, and means for retaining the bar at any desired adjustment. 6th. The combination, with a magnet, of a bar or lever adapted to magnetically connect the polar and yoke ends of the magnet, being pivoted to be upon one end, and adjustable to or from the other end. 7th. The method of controlling or regulating the induction of current in a bobbin rotating upon its axis within a magnetic field, which consists in shunting away from or around said field more or less of the lines of magnetic force which normally would pass through and strengthen such field.

No. 13,735. Improvements on Modes of Protecting Buildings and Oil Tanks from Lightning or Fire. (*Perfectionnements aux modes de protection des bâtiments et des réservoirs à huile contre la foudre et l'incendie.*)

Joseph L. Chambers, George H. Barbour and George T. Steadman, Cincinnati, Ohio, U. S., 20th November, 1881; for 5 years.

Claim.—1st. The combination of the rods R r and insulators F V X securing said rods in position, without electrical connection, either with the building or the ground. 2nd. The rods R r electrically insulated both from the building and the ground and having, in addition to upturned points, down-turned points S. 3rd. The combination of an hermetically closed oil tank and lightning rods insulated from said tank and from the ground. 4th. The combination, with an hermetically closed oil tank, of lightning rods insulated both from the tank and from the ground, and having both upturned points R and down turned points S. 5th. The combination of the hermetically closed oil tank A, gas delivery pipe H and system of insulated lightning rods.

No. 13,736. Improvements on Cigarette Mouth-pieces. (*Perfectionnements aux porte-cigarettes.*)

Alexander A. Boutell, Windsor, Ont., 20th November, 1881; for 5 years.

Claim.—A glass tube having a practically cylindrical portion to join the cigarette, and an extended mouth tip flattened uniformly from end to end and having a practically uniform long diameter greater, and short diameter less than the diameter of the cylindrical portion.

No. 13,737. Improvements on Bicycles. (*Perfectionnements aux vélocipèdes.*)

James Ames and John Hogan, Guelph, Ont., 20th November, 1881; for 5 years.

Claim.—1st. In a bicycle or similar vehicle operated by treadle power, a foot treadle F, having its end opposite to that upon which the strap is secured pivoted to a cross head supported in suitable guides on the main frame C, in combination with the spur wheel E, connected to the treadle F by the crank pin, and to the main axle B by the pinion D. 2nd. In a bicycle or other similar vehicle operated by treadle power, a foot lever F attached to a crank upon the main axle B and having an upwards bent end to carry the foot strap, in combination with a cross head G attached to the lever F and arranged to support it on a suitable stud.

No. 13,738. Improvements on Bottle Wrappers. (*Perfectionnements aux classes des bouteilles.*)

Martin V. Kacer, St. Louis, Mo., U. S., 23rd November, 1881; for 5 years.

Claim.—In a bottle wrapper formed of paper or board having numerous holes with ragged edges projecting on the inner side of the wrapper.

No. 13,739. Improvements on Vehicles. (*Perfectionnements aux voitures.*)

Cyrus W. Saladee, Wolcottville, Ct., U. S., 23rd November 1881; for 5 years.

Claim.—In a road wagon having a rigid frame and body supporting spring platform, a spring brace extending from one axle to the other, the combination, with rigid frame and spring platform consisting of spring B B connected to one axle and an equalizing bar, of a spring brace connecting the front and rear axles to prevent a longitudinal thrust of the body.

No. 13,740. Improvements in Harrows and Cultivators. (*Perfectionnements aux herses et aux cultivateurs.*)

Jasper P. Warner, Dowagiac, Mich., U. S., 23rd November, 1881; for 5 years.

Claim.—1st. In a spring tooth fastener, the shoulder iron B with the hub K and series of cog-*Ét.* 2nd. In a fastener for spring teeth, the central iron C with its ribs L, series of cog-*C* and concave extension G. 3rd. A spring tooth supporter, the gripping cap D with rib S and flange d. 4th. The combination of the shoulder iron E, central iron C, gripping cap D and bolt F.

No. 13,741. Improvements on Spring Beds. (*Perfectionnements aux sommiers & ressorts.*)

James Turner, Ingersoll, Ont., 23rd November, 1881; for 5 years.

Claim.—1st. A spring bed consisting substantially of a series of coil springs A connected and linked together by a series of clips C fastened to the springs either at right angles, straight or diagonally. 2nd. In combination with the springs A and clips C the cross bars D D passing through said springs and connected thereto either at head or foot or at sides. 3rd. The springs E attached at head and foot, or at sides, the lower ends being connected to slats B, and the upper ends to cross bars D. 4th. The clips C, constructed with twisted ends b, c, for clipping the wires and at the same time confining the flying ends a.

No. 13,742. Improvements on Corsets. (*Perfectionnements aux corsets.*)

Joseph S. Guthrie, London, Ont., 23rd November, 1881; (Extension of Patent No. 6,817.)

No. 13,743. Improvements on Visual Indicators. (*Perfectionnements aux indicateurs visuels.*)

Chester H. Pond, New York, U. S., 23rd November, 1881; (Extension of Patent No. 13,507.)

No. 13,744. Improvements on Visual Indicators. (*Perfectionnements aux indicateurs visuels.*)

Chester H. Pond, New York, U. S., 24th November, 1881; (Extension of Patent No. 13,507.)

No. 13,745. Improvements on Coverings for Steam Boilers, Pipes, &c. (*Perfectionnements aux couvertures des chaudières, tuyaux & vapeur, &c.*)

Jane Merriam, Milwaukee, Wis., U. S., 24th November, 1881; for 5 years.

Claim.—1st. A casing of wire gauze filled with mineral wool and adapted for being placed about the pipe or boiler and secured thereon. 2nd. A casing of wire gauze filled with mineral wool, having a layer of asbestos between the wool and its inner wall and adapted to be placed about a pipe or boiler. 3rd. A casing filled with mineral wool, in combination with bracing wires c for holding the walls apart. 4th. A gasket composed of mineral wool encompassed by wire-gauze on all sides.

No. 13,746. Improvements in Nut Locks. (*Perfectionnements aux arrêts-écrous.*)

Franco B. Kendall, David M. Kendall and Amos Barford, Monmouth, Ill., U. S., 24th November, 1881; for 5 years.

Claim.—1st. A nut having a cavity in one side filled by a polygonal rubber block C which projects beyond the nut and has a hole for the reception of the bolt, operating in combination. 2nd. In combination with a nut B having a cavity b, a rubber block c seated in said cavity and which projects beyond said nut, and provided with a hole c somewhat smaller than the main threaded portion of the bolt, and a tapering hole d adapted to enter the hole c and force the rubber outward against the walls of the cavity b.

No. 13,747. Improvements in Electric Lamps. (*Perfectionnements aux lampes électriques.*)

Alexis J. B. Cance, Paris, France, 24th November, 1881; for 15 years.

Requis.—1. L'emploi d'une vis pour produire automatiquement le mouvement du régulateur, sous l'action du poids mouvant qui détermine le rapprochement des charbons. 2. Les dispositions d'ensemble et de détail du mécanisme de déclenchement et spécialement le type de roue d'échappement représentée sur le dessin. 3. La combinaison de ce mécanisme de déclenchement avec la vis. 4. Les moyens spéciaux employés pour produire l'écart instantané au moment de l'allumage. 5. Le système indiqué de porte-charbons permettant le centrage quelque soit le diamètre des baguettes. 6. Le mode de suspension du charbon du bas permettant de régler son avance à volonté suivant la nature des courants employés. 7. La disposition sus-mentionnée de la bobine creuse ou de l'électro aimant destinés à régler automatiquement la marche des charbons.

No. 13,748. Improvements on Candy Packages. (*Perfectionnements aux sacs à bonbons.*)

Warren B. Howe, Chicago, Ill., U. S., 25th November, 1881; (Re-issue of Patent No. 12,509.)

Claim.—1st. A packet wedge-shaped or prismatic in form composed of a series of candy sticks or other material contained within an envelope or wrapper folded to secure and maintain said form. 2nd. The combination, with a shipping case cylindrical in form, of wedge or prismatic like packets, in which a series of candy sticks or other material are retained within an envelope or wrapper. 3rd. The combination with a shipping case of wedge or prismatic like packets, in which a series of candy sticks or other material are retained within an envelope or wrapper, said wrapper being provided with overlapping folds or flaps, to guard the sides of the packet. 4th. The process of forming packets of candy for packing in receptacles for shipment, the same consisting in having a series of sticks piled and held together to form a packet with converging sides and vertical ends. 5th. The process of forming packets of candy for packing in cylindrical receptacles, the same consisting in arranging a series of sticks of candy upon, and parallel to and contiguous with each other, with their ends in a vertical line and sides converging. 6th. A wrapper having a wedge-shape and provided with flaps or folds upon its incline sides, said wrapper being adapted to conform to and maintain the contents of the same, so that said contents will have vertical ends and inclined sides corresponding with the wrapper. 7th. A wrapper for wedge-shaped packets having flaps or folds upon its inclined sides, and projecting edges folded over to close the base end of the same, with one of said edges overlapping the remaining edges and locking said edges. 8th. The method of forming a series of sticks of candy into a wedge-shaped packet and wrapping the same with a close wrapper, consisting in first placing the wrapper in a V-shaped die, then filling the wrapper with sticks of candy and packing 19 each other, until their bulk attains approximately the shape of said die, then creasing the wrapper and folding the corners of the wrapper against the sides of the packet, and finally folding the projecting edges to close the top of the wrapper and packet. 9th. In packing sticks of candy for shipment the combination, with a cylindrical receptacle, of a series of packets, arranged with the converging sides contiguous to each other and intersecting at the centre of the receptacle, whereby said stick candy packet may form one or more contiguous layers, utilizing the full capacity of such receptacle. 10th. A prismatic or wedge-shaped wrapper, consisting of a sheet of paper folded or otherwise formed and adapted to be packed with its contents in a cylindrical receptacle. 11th. The concave package wrapper former, of triangular or other shape, adapted to give shape to and permit the folding of the wrapper. 12th. A package former having a triangular or other shaped recess adapted to receive, hold and maintain the wrapper and contents, so that said wrapper may be folded and closed. 13th. The combination, with a packing receptacle approximately cylindrical in form, of a series of packets of candy sticks packed in one or more layers, and filling the packing space of the receptacle.

No. 13,749. Improvement on Stoves. (*Perfectionnement des poêles.*)

William H. Landon, Princeton, Ont., 25th November, 1881: (Extension of Patent No. 1,250.)

No. 13,750. Improvements on Heating Stoves. (*Perfectionnements aux poêles de chauffage.*)

George W. Herrick, Detroit, Mich., U. S., 26th November, 1881: for 5 years.

Claim.—1st. The main outer shell S and the inner fuel chamber A having the walls E provided with the slots c, and the combustion chamber D having its bottom or lower end open, and its lower portion above said bottom in communication with the fuel chamber through said slots. 2nd. The combustion chamber or flue D inclosed by a main outer shell and opening at its bottom into an ash pit, and the fuel chamber A inclosed, also by said outer shell, and separated from the combustion chamber or flue by means of a slotted wall E and the ash pit arranged below the grate of said fuel chamber and separated from the ash pit of said combustion chamber. 3rd. The main shell S provided with the protecting fire brick wall H, the inner fuel chamber having the slotted wall E and the combustion chamber or flue D which is open at its bottom or lower end, and the lower portion of which lies between the said walls H & E.

No. 13,751. Improvements on Spring Bolsters. (*Perfectionnements aux sommiers à ressorts.*)

Charles A. Howard, Pontiac, Mich., U. S., 26th November, 1881: for 5 years.

Claim.—1st. The removable spring attachment for a wagon having notched side pieces, a longitudinal semi-elliptic spring upon each side piece, a cross bar parallel to the bolster uniting the tops of the two springs and a semi-elliptic cross spring beneath the bar and adapted to be thrown into or out of gear, by rotating it about its point of attachment to the said bar. 2nd. A bolster spring attachment for a wagon having notched side pieces adapted to fit over the bolster and bearing semi-elliptic springs, and a bar parallel with the bolster uniting the tops of said springs, the whole adapted to be put upon or removed from the bolster at will.

No. 13,752. Improvements in Car Wheel Cleaners. (*Perfectionnements aux nettoyeurs des roues de chars.*)

Patrick H. Griffin, Detroit, Mich., U. S., 26th November, 1881: for 5 years.

Claim.—1st. A revolving nozzle provided with a fan-shaped discharge, gradually decreasing in thickness from its inlet to its outlet end, and adapted to deliver a cinder blast in a direction oblique to its axis, whereby a scraping action of the cinders upon the surface to be cleaned is obtained. 2nd. A nozzle B having a fan-shaped discharge gradually decreasing in thickness from its inlet to its outlet end, and adapted to be rotated in a fixed bearing, in combination with a suitable pipe for supplying said nozzle with a supply of cinders or other analogous substance, and of air for propelling said substance. 3rd. In combination with the rotating nozzle B, the sleeve B' and the bearings B'', the stationary blast pipe A having one or more openings b,

and the sleeve or thimble E provided with corresponding openings. 4th. The sleeve B adapted to rotate within the fixed bearings B' and provided, at one end, with an opening to receive the blast pipe and, at the other end, with a flange for entering the end of the nozzle B, in combination with the blast pipe A, a nozzle B and suitable means for rotating the sleeve B and nozzle B.

No. 13,753. Improvements on Magneto or Dynamo-Electric Machines. (*Perfectionnements aux machines électro-magnétiques ou dynamiques.*)

Thomas A. Edison, Menlo Park, N. J., U. S., 26th November, 1881: for 15 years.

Claim.—1st. In a dynamo or magneto electric machine or electric engine having an armature provided with radial inducted bars revolving in the magnetic fields. 2nd. The armature of a dynamo or magneto electric machine or electric engine, constructed in the form of a metal disk, divided into radial sections connected together and insulated from each other, so as to produce a rigid disk. 3rd. A dynamo or magneto electric machine, or electric engine, the armature formed of radial bars symmetrically connected together and with commutator bars, so that all the radial bars will be kept continually in circuit. 4th. A magneto or dynamo electric machine, or electric engine, having in combination, the armature constructed of radial bars connected in pairs at their inner ends with the commutator bars, and suitable connections of different pairs at the outer ends of the radial bars, whereby the radial bars will all be kept continually in circuit. 5th. The concentric rings for connecting the armature bars. 6th. The combination, with the armature, of the concentric rings for connecting the armature bars, revolving outside of the polar extensions of the magnet or magnets. 7th. The method or means for strengthening a disk armature, consisting in attaching a core or disk to one side of the same. 8th. The method or means for strengthening a disk armature, consisting in providing the same with a central core. 9th. A strengthening core or disk for disk armatures, made of spirally wound iron and an insulating material. 10th. The combination with the cylindrical armature, of the concentric rings, for connecting the inductive bars.

No. 13,754. Improvements in Electric Lamps. (*Perfectionnements aux lampes électriques.*)

Joseph A. I. Craig, Edwin R. Whitney and Charles L. Bossé, Montreal, Que., 26th November, 1881: for 5 years.

Claim.—1st. The combination of a fixed carbon, a movable carbon supported on a vertically sliding rod, electro magnets B B' connected to rod carrying movable carbon, and with armature and the described connections, whereby said armature is adapted to draw down the rod C, a weight for raising said rod, a supplemental electro-magnet in a permanently closed shunt, and provided with an armature and lever adapted to act upon and raise the first armature, whereby the movable carbon is permitted to rise, when the distance between the carbons has increased. 2nd. The combination of the magnets B B', armature b, collar b' with its springs, with the rod C and weights adapted to raise the same, and with the supplementary magnet D and armature d, the latter being adapted to operate upon the armature b, said devices having electrical connections. 3rd. The combination of the case A, yoke H supporting the upper carbon, and tube containing the magnets B B' D and their armatures and electrical connections, with the rod C supporting the negative carbon, the tube G and the weight F.

No. 13,755. Improvements on Reaping and Mowing Machines. (*Perfectionnements aux faucheuses-moissonneuses.*)

William N. Whiteley, Springfield, Ohio, U. S., 26th November, 1881: for 15 years.

Claim.—1st. The cutting apparatus connected to the main frame of machine by means of the parallel bars F F F'. 2nd. The lever F F' mounted on main frame of machine, in combination with the bars F F' and cutting apparatus. 3rd. The axle or shaft A mounted on the main frame of machine, in combination with the seat K K' and casting L. 4th. The hinged tongue frame B mounted on the axle or shaft A. 5th. The compound acting tilting lever H arranged in connection with the tongue frame and gear rack, and connection to give a rocking or tilting motion to the cutting apparatus independent of the tongue and seat. 6th. The independent draft connection J between the whiffletrees and main shoe and cutting apparatus, for the purpose of relieving the strain upon the joints supporting the cutting apparatus. 7th. The gear rack B and connections, in combination with the driving wheel, driving axle and cutting apparatus. 8th. The raking mechanism, supported directly upon the main shoe D and driven directly from the axle or shaft A of the driving wheel A. 9th. The combination of the parallel bars F F F' with the raking mechanism located upon the main shoe. 10th. The gram wheel lever N and link N', in combination with the sliding block M and gram wheel M.

No. 13,756. Improvements on Harvesters. (*Perfectionnements aux moissonneuses.*)

The Massey Manufacturing Company, (Assignee of William Johnston), Toronto, Ont., 26th November, 1881: for 5 years.

Claim.—1st. In a harvesting machine in which the revolving axle of the main driving wheel is supported in bearings on both sides of the said wheel, and the rake driving mechanism operated direct from the revolving axle of the main wheel, a link journalled on the fingers beam and flexibly connected to the main frame of the machine, in combination with any suitable lifting device, for adjusting the height of the finger beam. 2nd. In a harvesting machine in which the tilting of the main frame imparts a similar movement to the finger beam, a link flexibly connected to the main frame and journalled in a bracket secured to the finger beam, at or near its inner end, in combination with a bar connecting the finger beam to the main frame so as to hold the finger beam horizontally when being adjusted vertically by the lifting chain connecting its inner end to the lifting lever supported on

the main frame of the machine. 3rd. In a harvesting machine in which the finger beam has a vertical adjustment independent of the main frame, a link journalled on the finger beam from which point it extends front and rear to the main frame where it is connected, so as to have a vertical rocking movement while forming lateral braces to the finger beam, in combination with a rod extending from the main frame to a bracket on the finger beam, and forming a brace to hold the finger beam horizontally while permitting the vertical adjustment thereof. 4th. In a harvesting machine in which the tilting of the main frame imparts a similar movement to the finger beam, the combination, with the finger beam of a flexible connection between it and the main frame, which permits the free vertical adjustment of the finger beam, while at the same time holding it so that the tilting of the main frame will convey a corresponding movement to the finger beam.

No. 13,757. Improvements on Earth Boring and Excavating Machines. (*Perfectionnements aux machines à percer et creuser le sol.*)

John W. Carley and Julius W. Storey, Cotton Gin, Texas, U. S., 30th November, 1881; for 5 years.

Claim.—1st. The combination, with a derrick composed of guide posts A and lateral braces B C, the posts having slots, of the cross bar I secured to the bail H and having cross heads *i*. 2nd. In combination with the derrick, the cross bar I secured to the bail H and being guided by the uprights of the derrick. 3rd. In combination with an earth auger and endless chain of buckets, the cross bar or shaft T journalled in the auger and carrying wheel *r*. 4th. In combination with an earth auger and endless chain of buckets, the shaft M journalled in the ring M and carrying the wheel *r*. 5th. The combination, with an auger, endless chain of buckets and ring M, the spout O secured to said ring, so as to revolve horizontally with the parts. 6th. In combination with the auger and endless chain of buckets and driving mechanism, the rafter X secured to the ring M and operated by pins on one of the chain wheels. 7th. The combination, with a derrick, of the auger, endless chain of buckets, cog wheel K ring M and shaft *m*, carrying wheels *m* *m*. 8th. In combination with the auger endless chain of buckets and shaft N, the disk guide W secured to the shaft or its couplings, and having an opening on each side to allow the passage of the chain and buckets. 9th. In an earth auger, the gear wheel K with teeth or cogs on part of its under face, and having a smooth portion K₁ to form a bearing for the wheel *m*. 10th. An earth auger wherein an endless chain of buckets is employed, a guide for the said chain which is secured to the auger shaft, or its coupling. 11th. The combination, with an earth boring machine, of the coupling O for securing the sections of the shaft together, having apertured lugs O.

No. 13,758. Improvements on Alarm Bells and Door Knobs. (*Perfectionnements aux timbres et aux boutons des portes.*)

Albert D. S. Bell, Newton, (Assignees of Francis W. Pearson, Boston, and Andrew M. Eastman, Somerville,) Mass., U. S., 30th November, 1881; for 5 years.

Claim.—The improved alarm mechanism, consisting of the handles *c*, e, h, e, spindle *d*, knob rose *i*, its recess *j* and cam faces *u*, *u*, *u*, bent lever *k*, *kn*, slotted latch plate *l*, *p*, *g*, guides *p*, *q*, projection *u*, cam groove *t*, the hammer *m*, *m*, *m* and springs *n*.

No. 13,759. Improvements on Machine Treadles. (*Perfectionnements aux marches des machines.*)

Robert Steel, Charles H. Binns, Adam Steimmetz, jr., Charles A. Spring and William A. Nichols, Philadelphia, Pa., U. S., 30th November, 1881; for 15 years.

Claim.—1st. The combination of a coil or equivalent spring with the table of a sewing machine, and the upper end of an oscillating or swinging treadle, one end of the spring being confined to a barrel connected with the under side of the table top, and the other end to the upper end of the treadle, whereby to assist at each revolution of driving wheel, in returning the treadle from its backward to its forward position, and also for the purpose of retaining it in the latter position when the machine is not at work. 2nd. The combination of the treadle B having arms *b*, *b*, bracket C, centre pin *a*, barrel D and coil spring E. 3rd. The combination of the centre pin *a* having a spline *d*, with the barrel D having a longitudinal groove *e* in its eye, so that, as an axial adjustment is given to the barrel by turning the pin *a* in the proper direction, to regulate the tensile strength of the spring E, the spline is caused to slide in the groove *e*, thus avoiding the necessity of the barrel having any longitudinal play between the arms *a*, *a* of the bracket C, whereby to keep the spring in line with the plane of oscillation of the treadle.

No. 13,760. Improvements on Vehicle Springs. (*Perfectionnements aux ressorts des voitures.*)

George E. Harris, Lawrenceville, Pa., U. S., 30th November, 1881; for 5 years.

Claim.—1st. A vehicle running gear having the side springs and end springs, the braces L, L, L connected rigidly to the front and rear axles

and to the central transverse equalizing bar. 2nd. The side openings having depending brackets I supporting the transverse equalizing bar K, the end springs connected to the side springs and supported upon the axles, and the braces L, L, L rigidly connected to the equalizing bar and axles. 3rd. The reach formed by elastic braces, rigidly connected to the axles and to a central transverse equalizing bar. 4th. The combination, with axles A B, end springs D D₁ and side springs E E, of supports G, bars H, brackets I, equalizing bar K and braces L, L, L. 5th. The thimbles *m* having perforated packing-blocks projecting at each end of said thimble, so as to form elastic cushions between the said thimbles and the end of the equalizing bar and heads of the securing bolts. 6th. The combination, with the axles and side springs connected thereto, of the brackets depending from the middle of said springs, the equalizing bar supported thereby, and the front and rear braces having rigid connections with the axles and equalizing bar. 7th. The side springs, having elliptical eyes or apertures, provided with concave blocks or plates and packing cushions, to form bearings for the spindles of the end springs. 8th. The side springs having thimbles provided with grooves *c* and elliptical apertures, concave bearing plate *d* having ears *d* and packing cushions, to form bearings for the spindles of the end springs.

No. 13,761. Improvements in Dynamo-Electric Machines. (*Perfectionnements aux machines electro-dynamiques.*)

Joseph A. J. Craig, Edwin R. Whitney and Charles L. Bossé, Montreal, Que., 30th November, 1881; for 5 years.

Claim.—1st. An armature for a dynamo-electric machine having its core made up of segments of sheet metal arranged in circles around the armature shaft. 2nd. An armature for a dynamo-electric machine, made up of separate bobbins inserted and held together. 3rd. An armature for a dynamo-electric machine, made up of plates of sheet metal, air passages arranged longitudinally across the armature between each bobbin. 4th. In combination with an armature, such as described, the collars B B provided with outwardly curved flanges *b*, supporting rods C C and flanges *b* projecting inside the armature parallel with its shaft.

No. 13,762. Improvements on Fences. (*Perfectionnements aux clôtures.*)

Asa L. Burke, Orangeville, Ont., 30th November, 1881; for 5 years.

Claim.—1st. In wire fencing an iron post shaped and notched to receive the wires in combination with a fixed base plate having hinged wings on either side *f* and an end of the post projecting below it. 2nd. An iron post shaped and notched to receive the wires, in combination with a hooked bolt passing through a slotted passage way made in the post at right angles to the wires, and arranged to secure the wires in the notches. 3rd. An iron post shaped and notched to receive the wires a fixed base plate situated near the end of the post, and having hinged wings attached thereto, in combination with an adjustable steadying plate. 4th. In wire fencing in which the wires are supported in notches made in the iron posts, an intermediate auxiliary post provided with cross bars to steady it in the ground, and a sliding plate having diagonal notches cut in its edge in the opposite direction to similar diagonal notches cut in the auxiliary post.

No. 13,763. Method of Constructing Tubes. (*Méthode de fabrication des tubes.*)

Edward A. King, St. John, N. B., 30th November, 1881; for 5 years.

Claim.—The spiral winding of thin layers of wood and paper, each outer layer *a* crossing the inner layer B B in opposite directions, or diagonally, and being firmly glued or connected thereto, as applied to the construction of hollow tubes or cylinders.

No. 13,764. Improvements on Scale-Carts. (*Perfectionnements aux camions-pesés.*)

Patrick Murphy and James J. Lynett, Montreal, Que., 30th November, 1881; for 5 years.

Claim.—1st. In a cart or other vehicle for carrying merchandize, the body A balanced upon or hung from centres for the purpose of weighing the load. 2nd. In a combined cart and scale, the standards C C giving means of support for the beam F. 3rd. In a combined cart and scale, the sliding boxes D D running in standards and having formed in them, balance pivots E E for the beam F. 4th. The shaft I having, mounted thereon, cams K K for the purpose of raising the cart body A to a point of suspension. 5th. The combination of the shaft I having, mounted thereon, cams K K and operated by lever *l*, with boxes D D, balance pivots E E and beam F. 6th. In combination with the beam F the hangers or braces H H.

No. 13,765. Improvements in the Manufacture of Charcoal. (*Perfectionnements dans la fabrication du charbon de bois.*)

George McDougall, Three Rivers, Que., 30th November, 1881; for 5 years.

Claim.—A portable charcoal kiln, composed of sections A provided with flanges A', so as to be secured together by bolts or pins, and roof plate B similarly constructed and joined, and so formed as to leave a central top opening *b*.

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- No. 13,768. J. F. Sanders, Ogden, Utah., "Vacuum Dredges," Dec. 1st 1881.
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- No. 13,770. H. W. Barr, Cambridge Port, Mass., "Shoes," Dec. 1st 1881.
- No. 13,771. D. Whitlock, Newark, N. J., "Boot and Shoe Heeling Machine," Dec. 1st 1881.
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- No. 13,773. A. Day, Detroit, Mich., "Railway Track Cleaner," Dec. 1st 1881, Extension of Patent No. 9833.
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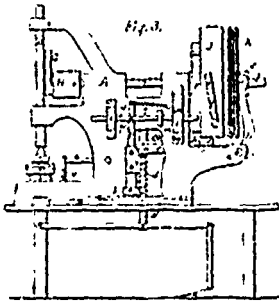
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 No. 13,871. A. F. Martel, Montreal, Que., "Mail Bag," Dec. 21st, 1881.
 No. 13,872. W. J. G. McAndrew, J. Eastwood and R. Kennedy, all of Hamilton, Ont., "Printers' Galleys," Dec. 21st, 1881.
 No. 13,873. W. Forbes, Plainwell, Mich., "Wind Mills," Dec. 21st, 1881.
 No. 13,874. J. H. Porter, Boston, Mass., "Self Levelling Berth," Dec. 20th, 1881.
 No. 13,875. T. A. Edison, Menlo Park, N. J., "Electric Lighting," Dec. 21st, 1881.
 No. 13,876. J. M. Reid, Montreal, P. Q., "Improvements in the Manufacture of Plaster of Paris," (Extension of Patent No. 6891.) Dec. 21st, 1881.
 No. 13,877. H. R. A. Boys, of Barrie, Ont., "Lubricator," Dec. 23rd, 1881.
 No. 13,878. H. H. Vivian, of Park Wen, Swansea, Wales, "Bronze," Dec. 23rd, 1881.
 No. 13,879. A. Benoit, of Dunkum, Que., "Car Brake," Dec. 23rd, 1881.
 No. 13,880. G. A. Beidler, Middleton, Penn., "Coffee Roaster," Dec. 23rd, 1881.
 No. 13,881. J. L. Vandermark, of Wilkesbarre, Penn., "Bag Tie," Dec. 23rd, 1881.
 No. 13,882. J. Womer-Jey, of Norwich, Norfolk, "Wooden Boxes and Machinery therefor," Dec. 23rd, 1881.
 No. 13,883. J. Cohen, of Montreal, Que., "Electric Pulley Brace," Dec. 23rd, 1881.
 No. 13,884. G. F. Filley, of St. Louis, Miss., "Range," Dec. 23rd, 1881.
 No. 13,885. A. Hosack, of Columbia, Ind., "Infexible Winker Brace," Dec. 23rd, 1881.
 No. 13,886. T. A. Edison, of Menlo Park, New Jersey, "Carbon Conductors," Dec. 26th, 1881.
 No. 13,887. J. Harris, Brantford, Ont., "Harvesting Machines," Dec. 26th, 1881.
 No. 13,888. J. F. Andrews, Nashua, N. H., "Coal Sifters," Dec. 26th, 1881.
 No. 13,889. A. Muir, East Garafrava, Ont., "Horse Powers," Dec. 26th, 1881.
 No. 13,890. A. Estrado, Perpignan, France, "Steam Superheating Apparatus," Dec. 26th, 1881.
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 No. 13,897. W. L. Gilchrist, Franklin, New Hampshire, "Hold-backs," Dec. 26th, 1881.
 No. 13,898. D. C. Kellem, Detroit, Mich., "Damper," Dec. 16th, 1881.
 No. 13,899. W. F. Hutchinson, Lynn, Mass., "Edge Setter," Dec. 26th, 1881.
 No. 13,900. E. W. Vanduzen, Newport, Kentucky, "Steam Water Elevator," Dec. 26th, 1881.
 No. 13,901. H. Bland, Sutton, Eng., "Boot and Shoe Attachment to prevent Slipping,"
 No. 13,902. A. S. Haslam, Derby, Eng., "Refrigerator," Dec. 26th, 1881.
 No. 13,903. A. R. Byrckett, Troy, Ohio, "Earth Scrapers," Dec. 25th, 1881.
 No. 13,904. W. M. Jackson, Providence, Rhode Island, "Incandescent Burner,"
 No. 13,905. T. R. Ferrall, Boston, Mass., "Anti-Frictional Bearings," Dec. 26th, 1881.
 No. 13,906. T. A. Edison, Menlo Park, N. J., "Meter for Measuring Electric Currents,"
 No. 13,907. W. W. Butler, Boise City, Idaho Territory, "Barb for Fences,"
 No. 13,908. H. Bland, Sutton, Eng., "Appliances to be Attached to the Shoes or Plates of Animals," Dec. 26th, 1881.
 No. 13,909. A. Harris, J. Harris, and J. K. Osborne, Brantford, Ont., (Assignees of J. Campbell McLachlan), Brantford, Ont., "Reaper," Dec. 28th, 1881.
 No. 13,910. G. F. Filley, St. Louis, Miss., (Assignee of D. H. Nation), St. Louis, Miss., "Range," Dec. 8th, 1881.
 No. 13,911. O. H. Jewell, and G. A. Stannard, Chicago, Ill., "Lubricator," Dec. 28th, 1881.
 No. 13,912. B. J. C. Howe, Syracuse, and S. B. Babcock, Village of Geddes, N. Y., "Horse Power Fire Engine," Dec. 28th, 1881.
 No. 13,913. F. G. Lee, Mallorytown, Ont., "Wind Mill," Dec. 29th, 1881.
 No. 13,914. A. Kasson, Milwaukee, Wis., "Thill Coupling," Dec. 29th, 1881.
 No. 13,915. A. Kasson, Milwaukee, Wis., "Axle Bearing,"
 No. 13,916. J. Noxon, and T. H. Noxon, Ingersoll, Ont., "Spring Drill Hoe."

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 ILLUSTRATIONS.

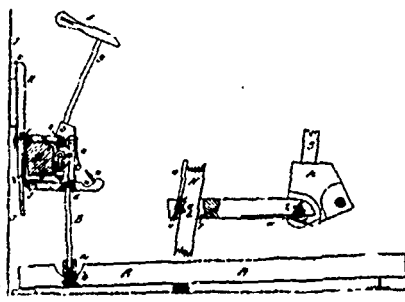
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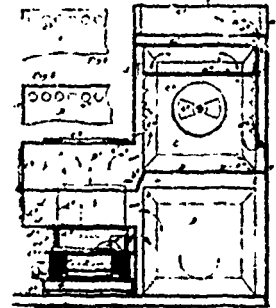
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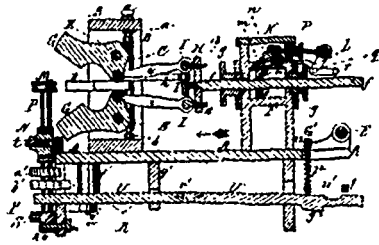
13619 Lake's Improvements in Machines for Cutting Button Holes.



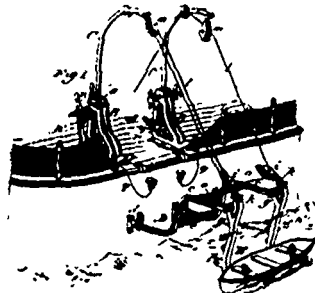
13620 Hebard's Improvements on Upright Piano-
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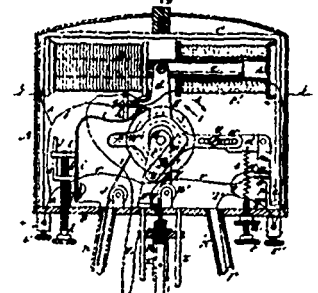
13621 Armour's Improvements in Stoves.



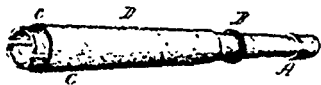
13622 Putnam's Improvements on Machines for Forging Horse Shoe Nails.



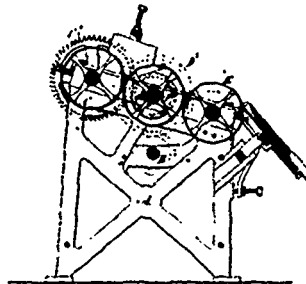
13623 Earle's Improvements in Apparatus for Lowering and Raising Boats on Vessels.



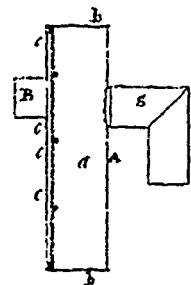
13624 Sheridan's Improvements in Electrical Lamps.



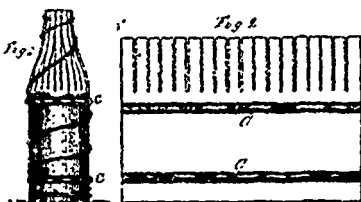
13625 Stone's Improvements on Cigar-holders.



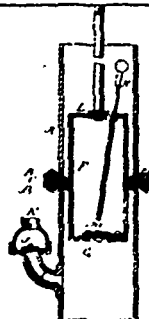
13626 McDougall's Improvements in Palat Mills.



13627 Lloyd's Improvements in Stove Ducts.



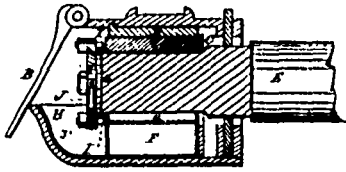
13628 Marks's Improvements in Wrappers for Bottles, Jars, etc.



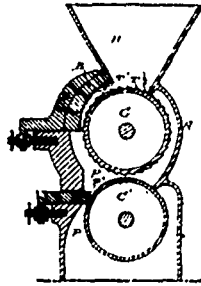
13632 Pease's Improvements on Pumps.



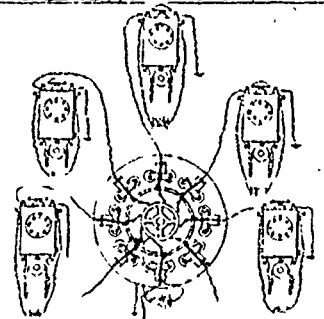
13633 Osgood's Improvements on Apparatus for Purifying Alcoholic Liquors.



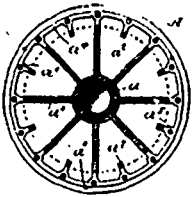
13634 Gear's Improvements on Car Axle Lubricators.



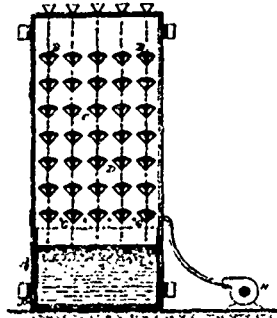
13635 Thompson's Improvements on Mills for Manufacturing Meal.



13636 Connolly & McTigue's Improvement on Telephones.



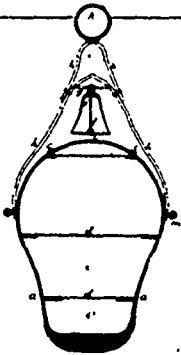
13637 Rigby's Improvements in Car Wheels.



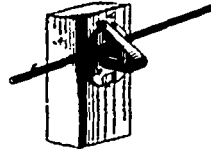
13638 Boomer & Randall's Improvements on Vinegar Apparatus.



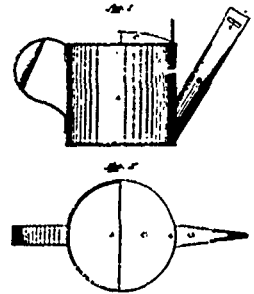
13639 Bailey's Improvements in Boots.



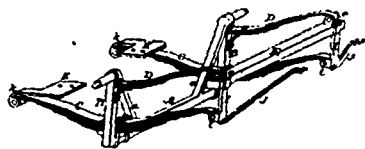
13640 Roth's Improvements on Life-preservers.



13641 Woodruff's Improvements on Fence Wire Fastenings.



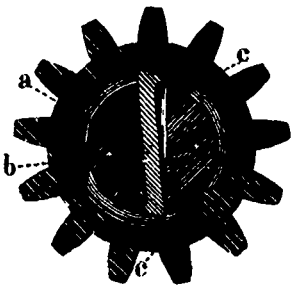
13642 Kemper's Improvements in Hand Seeders.



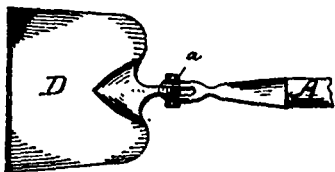
13643 Herdic's Improvements on Two-Wheeled Vehicles.



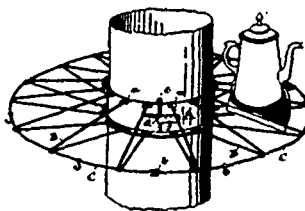
13644 Herdic's Improvements on Vehicles.



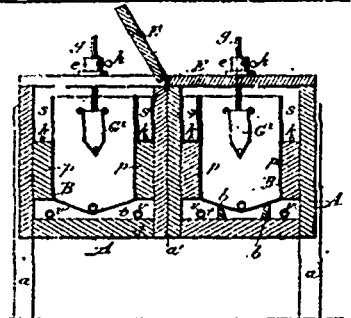
13645 Passmore's Improvements in Pawl and Ratchet Devices.



13646 Garrigus's Improvements in Combination Tools.



13647 Liddeo's Clothes Drier.



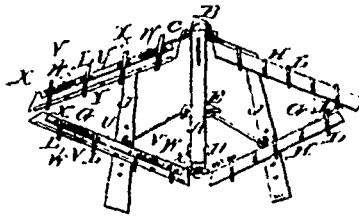
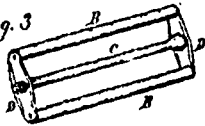
13648 Burrell's Improvements in Creamery Vats.

Fig. 2
Section

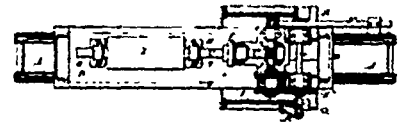


13649 Seaman's Improvements on Churns.

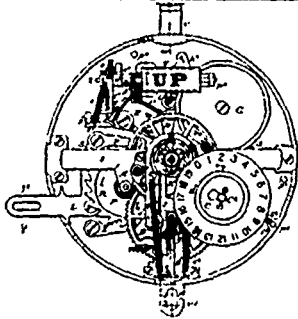
Fig. 3



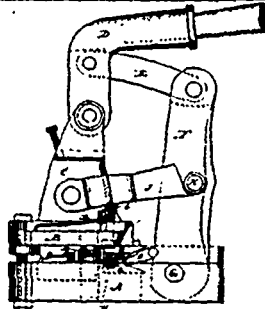
13650 Johnson's Improvements on Harrows.



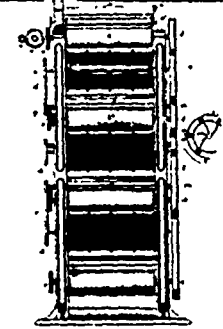
13653 Reynolds's Improvements on Machines for Grooving Rolls.



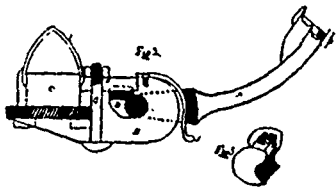
13654 Fowler & Lewis's Improvements in Registering Apparatus.



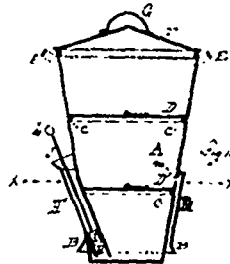
13655 Kinsey's Improvements on Saw Swages.



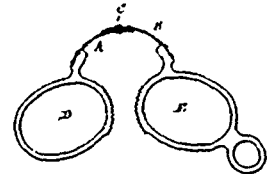
13656 Coagrove's Improvements in Grinding Mills.



13657 Richardson's Improvements on Thill Couplings.



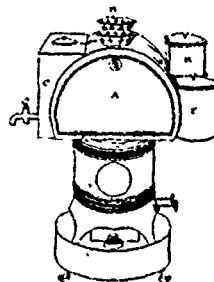
13658 Lidstone's Improvements on Steam Cookers.



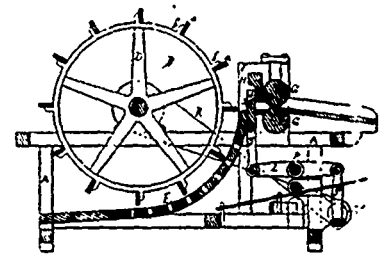
13659 Terstegen's Improvements in Eye Glasses.



13660 Clarke's Improvements on Fences.



13661 Tredale's Improvements on Coal Oil or Gas Stoves.



13662 Shinn's Improvements on Machinery for Breaking Flax, Hemp, &c.

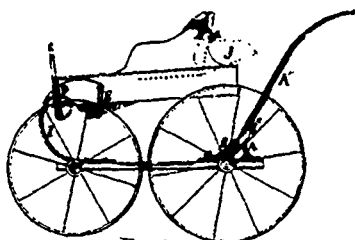
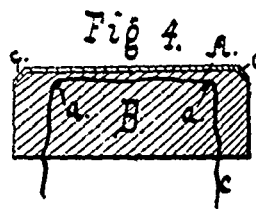
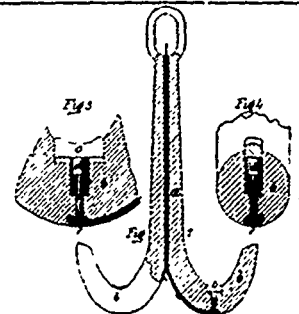


Fig. 1

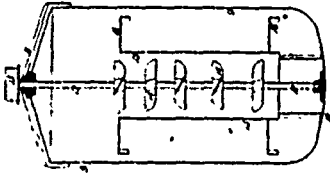
13663 Ziegler's Improvements on Children's Carriages.



13664 Thorp's Improvements in Artificial Stones.



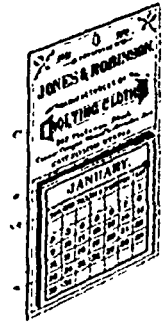
13665 Kingsford's Improvements on Submarine Cable Grappels.



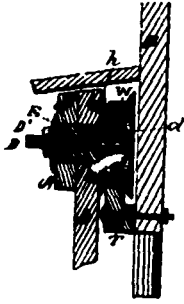
13666 Store's Improvements on Process for Treating Liquids or Matters Dissolved or Suspended in Liquids, and in Effecting the Interaction therewith of Gases or Vapours for Promoting various Chemical and other Operations, and on Apparatus therefor.



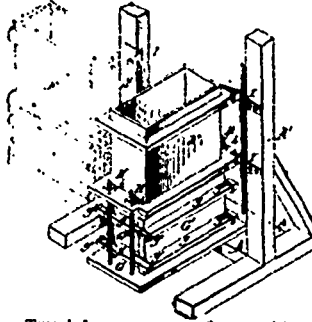
13672 Bustin's Improvements on Fire-escapes.



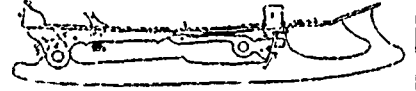
13673 Cutson's Art of Manufacturing Calendars.



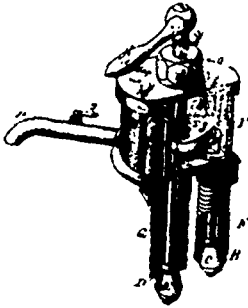
13674 Spiden's Improvements on Sliding Door Hangers.



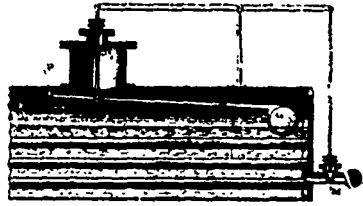
13675 Tyson's Improvements on Cotton and Hay Presses.



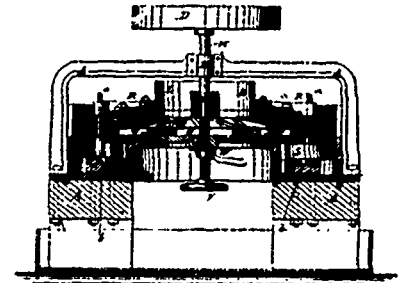
13676 Klotz's Improvement on Skates.



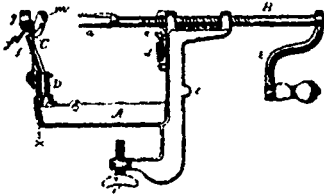
13677 Whittaker's Improvements on Faucets.



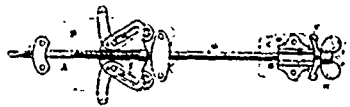
13678 Salisbury's Improvements on Feed Water Regulators.



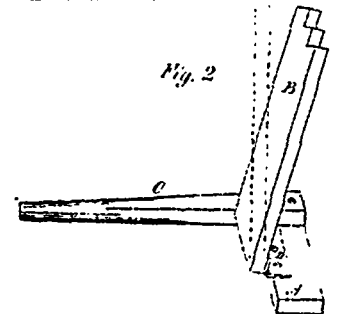
13679 Harris's Improvements in Ore Grinding and Amalgamating Machines.



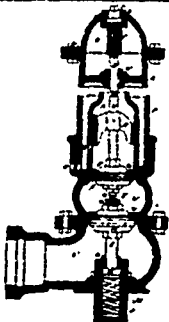
13680 Gear's Improvements on Apple Parers.



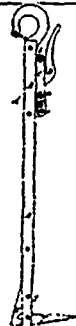
13685 Rawbone's Improvements on Skates.



13688 Smyth's Improvement in Waggon Jacks.



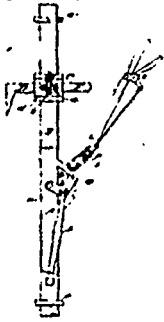
13687 Mathews's Improvements in Hydrants.



13686 Friel's Improvements in Hay Lifters.



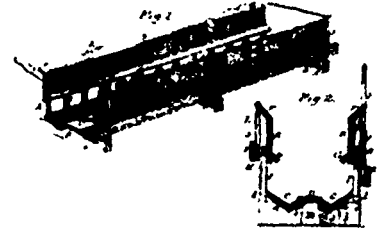
13689 Kiely's Improvements in Electro-magnetic Motors.



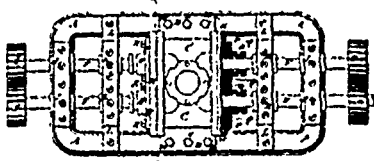
13680 Knight's Improvements on Saw Mill Dogs.



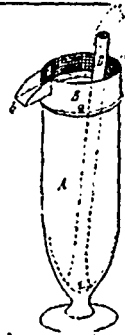
13691 Darby & Slater's Improvements on Nut Locks



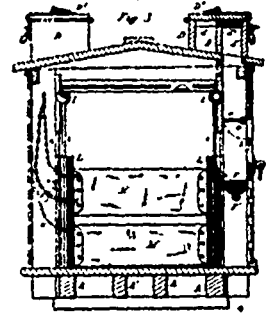
13692 North's Improvements in Sheep's Racks.



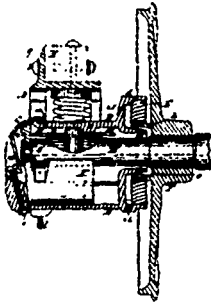
13695 Clark's Improvements in Rotary Pumps.



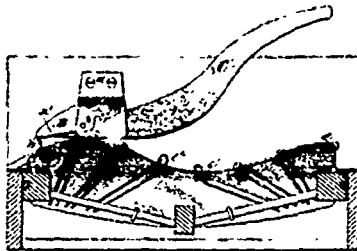
13694 Chase's Improvements on Fish Hatching Apparatus.



13696 Montgomery's Improvements in Stock Cars.



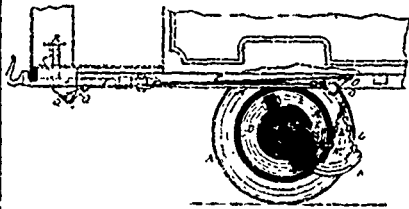
13697 Bemis's Improvements on Car Axle Boxes.



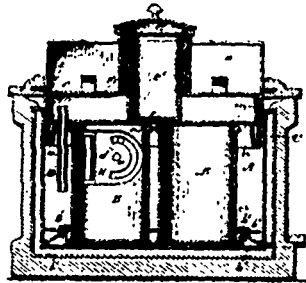
13698 Webster's Improvements in Wood Bending Machines.



13699 Richards's Improvements in Ice Boat Ploughs.



13700 Hill's Improvements on Car Starters.



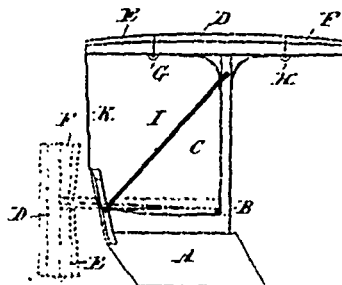
13701 Calkins' Improvements on Milk Coolers.



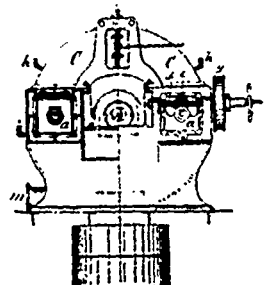
13702 Hudson's Improvements in Presses for Baling Hay, Cotton, &c.



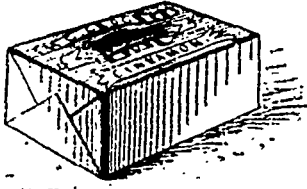
13703 Grant's Improvements on Syringes.



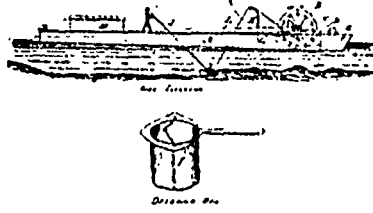
13708 Dansereau's Improvements in Vehicles.



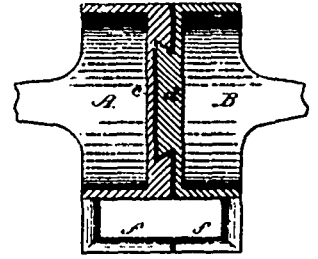
13708 Kaiser's Improvements on Wood Grinders.



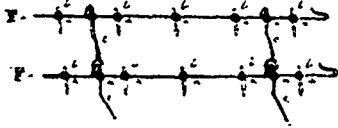
13709 Crocker's Improvements in Paper Packages.



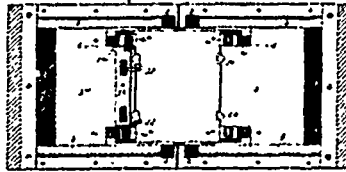
13710 Potter's Improvements in Machinery for Gold Mining.



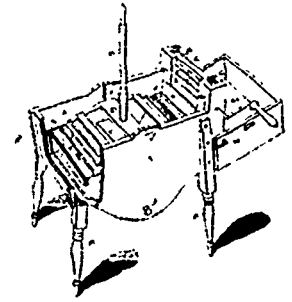
13711 Bowers's Improvements in Horse Collars.



13712 Maunder's Improvements on Iron Harrows.



13713 Chambers's Improvements on Hatchway Doors.



13715 Burke's Improvements on Washing Machines.

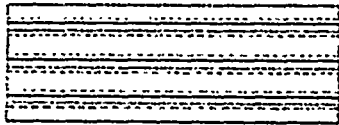


Fig. 1

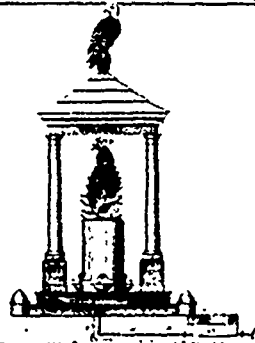


Fig. 2.

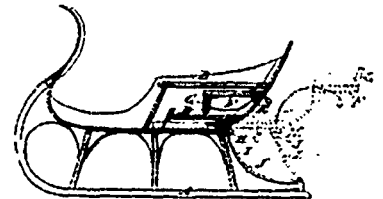


Fig. 3.

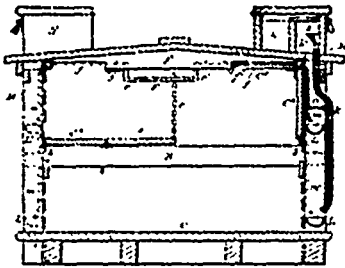
13716 McIlvaine's Improvements on Grooved Boards for Retaining Plaster.



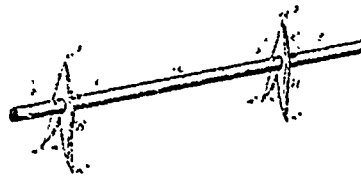
13717 Cogswell's Improvements to Refrigerating Apparatus.



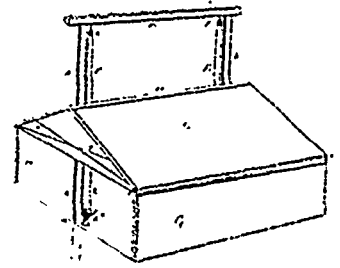
13724 Murphy's Improvements on Sleighs.



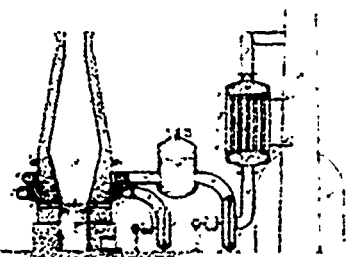
13725 Montgomery's Improvements in Stock Carts.



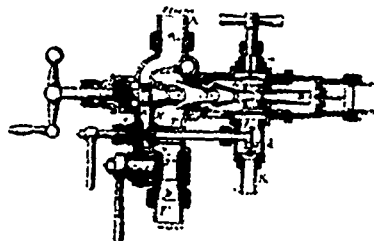
13726 Thompson's Improvements on Wire Fences.



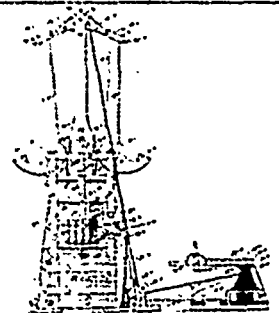
13727 Beatty's Improvements on Barn and Stable Structures.



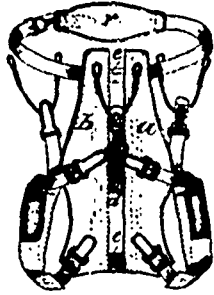
13728 Hall's Process and Apparatus for Smelting Iron Ores



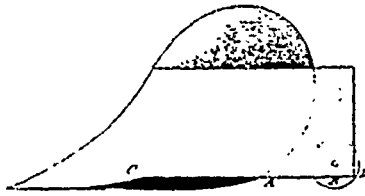
13729 Wohlert's Improvements on Injectors.



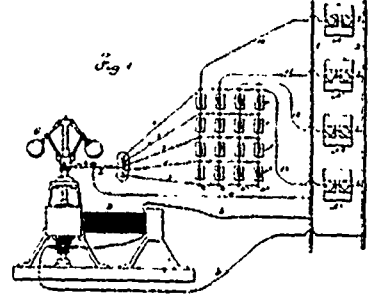
13733 Lord's Improvements in Hay Presses.



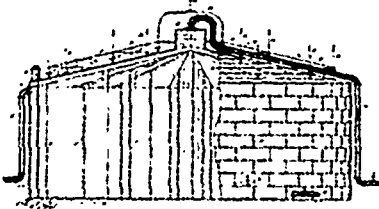
13732 Phelps's Improvements on Suspenders.



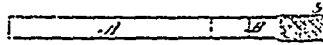
13733 Bawtinbimer's Improvements in Ploughs.



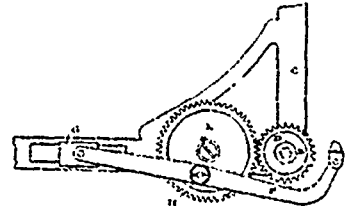
13734 Edison's Improvements on Dynamo or Magneto-electric Machines.



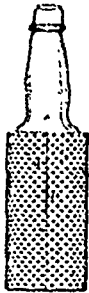
13735 Chambers's Improvements on "foles of Protecting Buildings and Oil Tanks from Lightning or Fire.



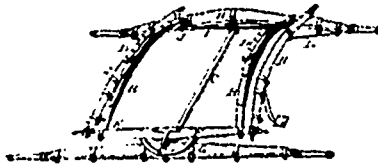
13736 Boutell's Improvements on Cigarette Mouth-Pieces.



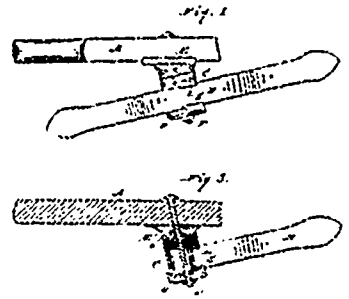
13737 Ames's Improvements on Bicycles.



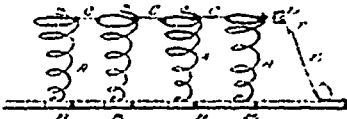
13738 Kacer's Improvements on Bottle Wrappers.



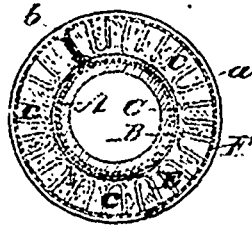
13739 Salatec's Improvements on Vehicles.



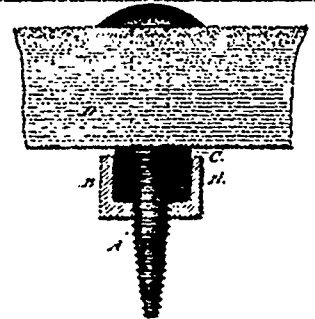
13740 Warner's Improvements in Harrows and Cultivators.



13741 Turner's Improvements on Spring Beds



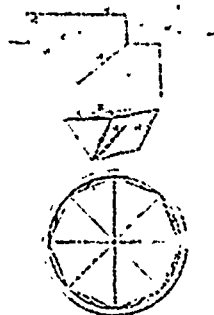
13745 Merriam's Improvements on Covering for Steam Pipes, Boilers, &c.



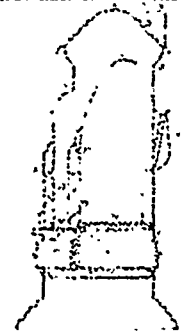
13748 Kendall's Improvements in Nut Locks.



13747 Casce's Improvements in Electric Lamps.



13748 Howe's Improvements on Candy Packages.



13750 Herrick's Improvements on Heating Stoves.

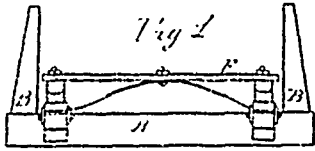
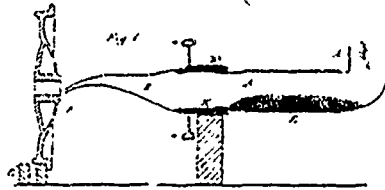


Fig 1

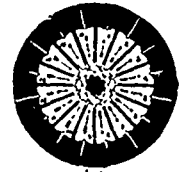


Fig 2

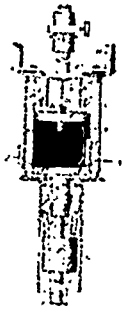
13751 Howatt's Improvements on Spring Balers.



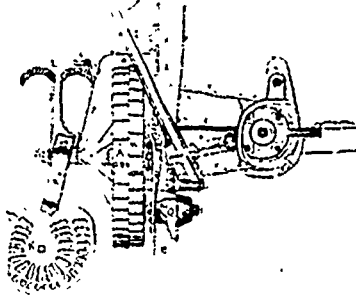
13752 Griffin's Improvements in Car Wheel Cleaners.



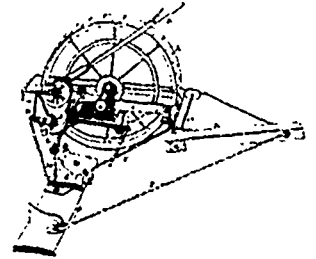
13753 Edison's Improvements on Magneto or Dynamo Electric Machines.



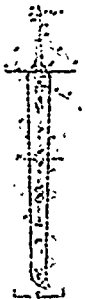
13754 Craig's Improvements in Electric Lamps



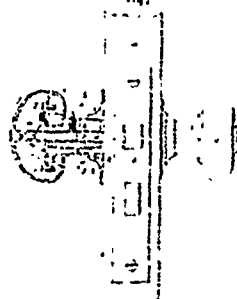
13755 Whiteley's Improvements on Harvesters.



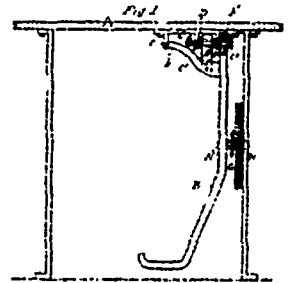
13756 Johnston's Improvements on Harvesters.



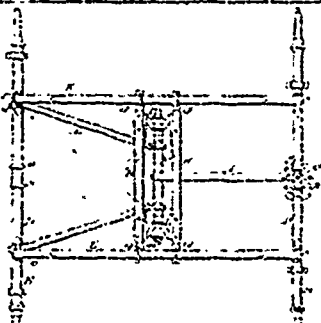
13757 Carley & Storey's Improvements on Earth Boring and Excavating Machines.



13758 Pearson & Eastman's Improvements on Alarm Bell and Door Knobs.



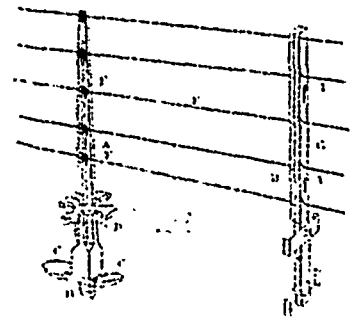
13759 Steel's Improvements on Machine Treadles.



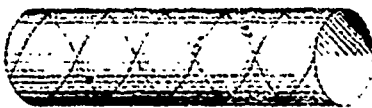
13760 Harris's Improvements on Vehicle Springs.



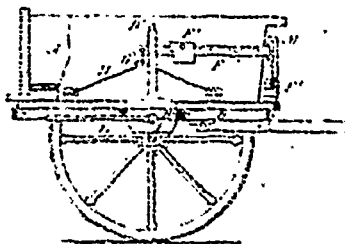
13761 Craig's Improvements in Dynamo-electric Machines.



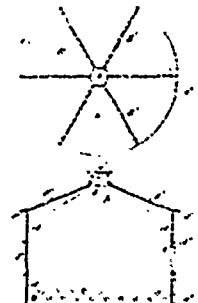
13762 Burke's Improvements on Fences.



13763 King's Method of Constructing Tubes.



13764 Murphy & Lynett's Improvements on Scale-casts.



13765 McDougall's Improvements on the Manufacture of Charcoal.