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CONTENTS.

INVENTIONS PATENTED	19
INDEX OF INVENTIONS	XXIX
INDEX OF PATENTEE'S	XXIX
ILLUSTRATIONS	29

INVENTIONS PATENTED.

No. 6917. Improvements in Smoke Consuming Devices.

(Perfectionnements aux appareils fumivores.)

Charles McWilliams and Levi C Barney Montreal Que., 28th December, 1876, for 5 ye. r.

Claim.—One or more pipe coils within a furnace perforated along their upper sides and adapted to deliver jets of air and steam into said furnace by the evaporation of water flowing through said coils.

No. 6918. Improvements on a Peg Cutting Machine.

(Perfectionnements a une machine a couper la chevilles.)

Louis Côté, Montreal, Que., 28th December, 1876, for 5 years

Claim.—1st. The process of cutting pegs inside of boots and shoes by means of a cutting blade H in the place of rasping or breaking them hitherto been done. 2nd The cutting blade or knife H operating within a guard K to cut the pegs in the inside of the boots or shoes. 3rd The knife or cutting blade H having a forward and backward and elliptical movement produced by the links J, the eccentric or cam F and the branch G. 4th In a machine to cut the inside portion of the pegs of boots and shoes the knife or cutting blade H in combination with the guard K. 5th The combination of the knife or cutting blade H with the branch or knife holder G. 6th The combination of the eccentric or cam F, the branch or knife holder G, the knife or cutting blade H, the arm I, the links J, the guard K and its movable plate M with the shaft D, the standard B and the table A.

No. 6919. Machine for Cutting the Pegs and Nails in Boots and Shoes.

(Machine à couper les chevilles et les clous dans les chaussures.)

Joseph O. Bourret, Montreal and Edmond A Bourret, St. Armand, Que., 28th December, 1876, for 5 years.

Résumé.—Le système de taille de la lime, a surface circulaire et oblique au az, sa garniture *cb* *cb* et *bc*, garde-fou des doublures et de l'empeigne de la chaussure l'entre deux C des parties BB de la lime. L'application de limes pour les différentes pointures des chaussures, et de donner à la lime une forme approchée de celle des différents points des semelles. L'attache de la lime au mât D de la glissière à l'aide de la vis *ce* et de l'ergot *co*, et au besoin par tout autre mode d'attache ou de fixation, ce qui constitue son montage ou son démontage de-dessus la machine quand il en est besoin. Le mode de glissière à rainures *q* *q* pratiqué dans l'intérieur de la tête des bras de support *af* et *F*, du levier *E* de cour. ande de la lime. Le mât *D* de la glissière et son œil à chape *d* le dit bras de levier *E* et son œil *d* oscillation oblong *L*, l'axe *d* oscillation *G*, le coulis *ce* et les dits supports *F* et *F*, la bielle *J*, la manivelle ou disque *K* et ses trous de réglage *d* *d*, de la course de la bielle *J* et l'application de l'arbre *L*, sur ses coulis *ce* *ce*, du volant *O* et des poulies folles et fixes *M* *M*, de leur courroie *N*.

Claim.—The mode of cutting the file with a circular and oblique surface *a* *a*, its gearing *b* *b*, and *b* the protector for the humps and shoe vamp, the connection *C* of the parts *BB* of the file. The application of files for the different shapes of shoes, and to give to the file a form approximating to that of the different sizes of the soles. The attachment of the file to the stock *D*, of the slider by means of the screw *ce* and the hook *co* and if necessary by any other mode of attachment or fixing which constitutes its means of fixing or removing from the top of the machine when necessary. The application of the groove *q* *q* cut in the head of the supporting arm *F* *F*, of the lever *E* of the driving gear of the file, the stock *D* of the guide and its eye *d* of the lever arm *E* and its oblong oscillating eye *L*,

the oscillating axis *G*, the cross-head guide *H*, the supports *af* and *F*, the rod *J*, the crank or disc *K* and its regulating holes *d* *d*, the stroke of the rod *J*, the application of the arbour *L* upon its pillar blocks *P* *P*, the fly wheel *O* and its loose and fixed pulleys *M* *M* and their belt *N*.

No. 6920. Improvement in Hydrants.

(Perfectionnement des bornes-fontaines.)

Charles S. Clover Bay City, Mich., Harvey H. Clover, Joseph H. Strehli and James Kieran, Cincinnati, Ohio, U. S., 28th December, 1876, for 5 years.

Claim.—1st. A hydrant having in combination a valve governed supply pipe a vacuum chamber, an ejector to create the vacuum and a discharge pipe. 2nd The combination of the inlet pipe A, flexible diaphragm valve C, disc D, frame *f* *E* *F* *F*, *G* *G*, spring *G*, lever *F*, water chamber B and a discharge pipe *l*. 3rd The combination of the flexible diaphragm valve C (combined with mechanism whereby it will cut off the supply of water to the hydrant) inlet pipe A, chamber B, ejector T W, chamber M and discharge pipe *l*.

No. 6921. Improvements on Hot Air Furnaces.

(Perfectionnements aux calorifères à air.)

Thomas F. Hemmich and Davis C. Schneider, Reading, Pa., U. S., 28th December, 1876, for 5 years.

Claim.—1st. The displacing of one third of the fire space and in its place putting in an additional heating surface thereby saving the coal displaced and gaining heat radiated from the inner portion of the ring of fire thus preventing the burning of any embers. 2nd The inner inverted conical shaped cylinder or air flue in combination with the outer conical shaped casing thus presenting a double heating surface through and over the fire. 3rd The ring *o* tubes *r* with the tie bolt *u* in combination with the clamping spider *t* thus equalizing the strain of expansion and contraction. 4th The annular channel *d* and ring frame *u* in combination with the sectional grate scrapers *u* and means for revolving the grate. 5th The introduction of the cold air underneath the centre of the heater through or by the central opening of the base *o*, bringing the cold air to all parts of the outer heating surface in combination with the ring *u* dividing the cold air current to equalize the cold air to the inner heating surface and equally distribute its force.

No. 6922. Improvements on Trace Fastenings.

(Perfectionnements aux accroches-traites.)

James K. Lake and Bernard McDevitt, Chicago Ill., U. S., 28th December, 1876, for 5 years.

Claim.—1st The combination of the wedge pieces C staple or eye B and ring D with the rope or trace E. 2nd The plate A provided with the hook *a* and hook *b* or staple B. 3rd The wedge C provided with corrugations or serrations to fit the strand of the rope.

No. 6923. Improvements on Atmospheric Gas Engines.

(Perfectionnements aux machines a gaz atmosphériques.)

Joseph Wertheim, Frankfurt, Germany, 4th January 1877, for 5 years

Claim.—1st An atmospheric gas engine constructed mainly of an explosion dome and appendages of a syphon pipe with paddle wheel and liquid reservoir and of a liquid piston actuated by the explosive force of a suitable gas and air mixture in the dome. 2nd The combination of the explosive dome A having entrance opening *a* and ignition opening *a* with the slide valve *V* having segment opening *d* and ignitor *G*. 3rd The combination of explosion dome with entrance opening *a*, slide valve *V* with segment opening *d* and of covering plate *Az* with corresponding gas and air openings *f* *f*. 4th The combination of the slide valve *V* having pivot at upper end and guide slot at lower end with a revolving segmentally slotted disk at top and a square pivot guide of dome at lower part. 5th The combination of covering plate *A*, fastening pin *e* and clamp screw *e* with dome A to secure covering plate in rigid but detachable manner. 6th The combination of slide valve *V* and ignitor *G* with fixed gas pipe *h* of dome to light ignitor after each explosion. 7th The igniting apparatus *G* composed of an outer casing *g*, inner burner *g* and air supply pipe *i*. 8th The burner *g* of ignitor *G* constructed of gas pipe *g*, fixed tube *g* with central exit perforation and of sliding and spring actuated interior sleeves *g* with side exit perforations to extinguish flame at each explosion. 9th The combination of the spring actuated supply cock *i* of ignitor *G* with contact face *h* of dome, to close air

supply during upward motion of slide valve to prevent extinction of igniting flame; 10th. The combination of ignitor with an air pipe *i*, spring acted cock *z* and an air pumping apparatus to supply air to the ignitor instantly after the explosion for expelling the gases of combustion and relighting the burner; 11th. The combination of wheel casing *C* having liquid channels *p* and *q* and clutches *p* with the paddle wheel *C*; 12th. The combination of liquid valves *E* *E* with the wheel casing *C* and paddle wheel *C* to govern the flow of liquid in forward and return directions; 13th. The liquid reservoir *D* having central open tube *D* for admission of atmospheric air; 14th. The liquid reservoir *D* having interior guard cover *q* with extension *q*; 15th. The combination of liquid reservoir *D* by pipe *q* with drip receptacle *q* of explosion dome to conduct liquid escaping from dome to reservoir; 16th. The combination of governor *m* and fulcrum lever arm *m* with clutch *l* of disk shaft of slide valve to interrupt or continue motion of slide valve for regulating speed of engine; 17th. The combination of disk shaft of slide valve having toothed wheel *l* with the catch *h*, and sliding and spring acted tooth or bolt *l* of driving pulley shaft; 18th. The explosion dome having top extension chamber *A* with exit opening for gases of combustion in combination with slide valve *a* and under swinging valve *m*; 19th. The combination of extension chamber *A* of explosion dome having exit opening *n* with slide valve *m* and pendulum valve *s* sliding along inside of dome to assist expulsion of gases and closing of exit opening; 20th. The combination of slide valve *m* of the extension chamber *A* with fulcrum and spring acted lever *n*, rod *n* and crank *u* of valve *l* of syphon pipe; 21st. The combination of horizontal plate *s* attached to slide valve *m* and having central pin *s* with sliding and pendulum valves *s*; 22nd. The central guide pin of plate *s* having collar at lower end to retain pendulum valve at lowermost position on receding of liquid.

No. 6924. Improvements on Seal Locks and Seals.

(*Perfectionnements aux serrures à cachet et aux cachets.*)

Franklin W. Brooks, New York, U. S. (Assignee of Wilson Hollmann), 4th January, 1877, for 5 years.

Claim.—1st. A seal lock composed of two parts, one sliding upon the other and enclosing or adapted to enclose a locking device and a seal, when said lock is constructed with a central shackle formed or supported by projections on the respective parts of the lock, the projection which forms or supports the lower member of the shackle being arranged on the back of the lock and serving also to accommodate a chamber for the locking device; 2nd. The locking pin *L* having its head constructed with an enlargement *l* at its extremity in combination with the parts *A* *B* of the lock, the former constructed with the socket *o* having a corresponding enlargement at bottom; 3rd. The seal composed wholly or in part of glass or analogous material and having a transparent or translucent portion or space through which the condition of the locking device can be seen when the seal is in position; 4th. A seal lock having its locking device arranged at one end of its seal chamber in combination with a seal having a transparent or translucent portion or space at one or both ends to expose the locking device to view.

No. 6925. Improvements on Bearings for Upright Shafting.

(*Perfectionnements aux collets des arbres verticaux.*)

James L. Reed and William L. Peters, Brooklyn, N. Y., U. S. (Assignees of John H. Teah), 4th January, 1877, for 5 years.

Claim.—1st. The combination of the funnel shaped receiver *A*, cage *C* with slotted arms *A* having sliding boxes *b*, and the tapering rollers *D* with the spindle *B*; 2nd. The lid or cover *E* having notches *x* and top flange *d*, in combination with the receiver *A* having shoulder *y*, flange *z* and the washer *G*.

No. 6926. Improvements on Screw Jacks.

(*Perfectionnements aux crics à vis.*)

James Findlay and George A. Burns, Toronto, Ont., 4th January, 1877, for 5 years.

Claim.—1st. The circular recess *a* going round the circumference of the screw *C* by removing one thread *a*, from the same or other recess of any suitable form, taking out only a portion of the thread *a*; 2nd. The box *A* constructed with one or more openings *b* in the chamber *B* by means of which the end of the screw *C* can be felt as well as seen when approaching the limit of action before readjustment of the jack.

No. 6926. Improvements on Abdominal

(*Perfectionnements aux corsets abdominaux.*)

Catharine A. Griswold, New York, U. S., 4th January, 1877, for 5 years.

Claim.—1st. An abdominal corset provided with it supporter attached to the front and sides and extending below the lower part of the corset; 2nd. The abdominal supporter *C* formed of a central band *D* and curved side bands *D*, the former attached to the lower front part of the corset and the latter to side stays or hip bands for the purpose of throwing the usual strain upon the hips and shoulders; 3rd. A lady's corset having rear extensions constructed and arranged in connection with lateral adjustable brace bands or lacing; 4th. A lady's corset provided with rear extensions above the usual height of the corset, said extensions being tapered or reduced in width to the width of the connecting shoulder straps.

No. 6928. Improvements on Wood Planing Machines.

(*Perfectionnements aux machines à raboter le bois.*)

Harlow M. Wilcox and Edmund G. Stiles, Chicago, Ill., U. S., 4th January, 1877, for 5 years.

Claim.—1st. The rock pressure bar *D* hung at two points at each end in combination with the bearing *R* and rubber rings *S*; 2nd. The housing *M* provided with a horizontal slot to receive the lubricating packing which communicates with the roller *I* by means of an opening through the part *M*.

No. 6929. Improvements on Scroll Sawing Machines.

(*Perfectionnements aux machines à évider.*)

Albert H. Shipman and Julius F. Binder, Rochester, N. Y., U. S., 4th January, 1877, for 5 years.

Claim.—1st. In combination with the saw *D* of the hangers *G* *G*, washers

h *h* and clamping screws *e* *e*, 2nd. The combination with the straight open ended spring arms *C* *C*, having an inherent elasticity for straining the saw of the fulcrum bar *E* pivoted permanently to the lower arm and constructed at the top with a wedge-shaped end which fits loosely into the notch *F* of the upper arm, whereby the said arm may be thrown open for the insertion or removal of the saw without disconnection of any of the parts; 3rd. The frame consisting of the standard *A*, the legs *J* *J* and the diagonal brace *S*; 4th. The bearing consisting of the shank *m* with flange *g* the screw stem *z*, washers *z* *z* and nut *y*.

No. 6930. Improvements on Lamp Burners.

(*Perfectionnements aux becs de lampes.*)

James Curzon, Darien, Ct., U. S., 4th January, 1877, for 5 years.

Claim.—1st. A lamp burner made of flat angular or curved wick tubes which radiate from the centre of the burner to form a star-shaped flame; 2nd. The combination of a dome provided with radial recesses extending from the center with a burner having radial wick tubes or sections; 3rd. The combination with radially arranged wick tubes of a perforated screen having a central orifice for supplying air to the inner edges of the flames.

No. 6931. Improvements on Railway Car Trucks.

(*Perfectionnements aux trécaux des voitures de railroads.*)

Laban B. Lyons and David M. Lyons, Chillicothe, Ohio, U. S., 4th January, 1877, for 5 years.

Claim.—1st. The detachable Lyons and confining link and hooks in combination with the truck beams; 2nd. The angular truck irons in combination with the metal frame provided with lateral and vertical projections; 3rd. The U-shaped hangers made in one piece in combination with the vibrating bearing or beam; 4th. The detachable hook hangers for suspending the brake beam in combination with the brackets *h* having removable pins; 5th. The combination of the hangers with the pivoted brake shoes and the brake head, the latter having a notch or open slot to receive the rod where-by the shoe is held in proper position on the head; 6th. The combination with the brake beams of the sliding hook *X* the link or staple *O* for securing the latter and the operating lever; 7th. The brake beam double hook hanger and recessed blocks attached to the beam to support the beams and to adapt them for convenient detachment; 8th. The cast frames *A* *A* having mortises for reception of the ends of the truck timbers.

No. 6932. Processes of Eliminating Phosphorus from Iron.

(*Procédés pour chasser le phosphore du fer.*)

John B. Kunkel, Catoctin Furnaces, Md., U. S., 9th January, 1877, for 5 years.

Claim.—1st. Reducing the oxide of iron to the metallic state in presence of dolomite; 2nd. The process of purifying metallic iron and eliminating phosphorus therefrom the same consisting in treating the molten metal with dolomite.

No. 6933. Composition of Matter for the Cure of Diseases of Horse Hoofs and Feet.

(*Composé pour la guérison des maladies des sabots et des pieds des chevaux.*)

Hiram Soper, Port Hope, Ont., 9th January, 1877, for 5 years.

Claim.—A compound composed of the following ingredients, viz iodine iodate of potash, hyposulphate of soda, gum, camphor, castor oil, glycerine, ammonia and hog's lard mixed in the proportions stated.

No. 6934. Improvements on Chairs.

(*Perfectionnements aux chaises.*)

Guillaume S. De Bonald, Berthier (en haut), Que., 9th January, 1877, for 5 years.

Claim.—The combination with a chair *A* the rocking holder *B* fixed to the transverse axis *C* with a bush *D*, the peg rod *J* *J*, one on each side of the chair seat *L*, and the disk or hat *s*, and *K* attached under the chair seat *L* to make the improved chair.

No. 6935. Improvements on Shirts.

(*Perfectionnements aux chemises.*)

Sarah J. Angus, (Assignee of James Angus), Ottawa, Ont. 9th January, 1877, for 5 years.

Claim.—Two bosoms overlapping either one over the other uniformly or equally which bosoms are attached to the shirt.

No. 6936. Improvements on Vehicle Axles and Wheels.

(*Perfectionnements aux essieux et aux roues de voitures.*)

Benjamin F. Richardson, Cincinnati, Ohio, U. S., 9th January, 1877, for 5 years.

Claim.—1st. The axle *D* having its arm in two lengths offset to make different diameters the larger of which has greater sectional area and strength than the sectional area and strength of the body of the axle; 2nd. The carriage or wagon wheel having an axle box of different diameters so as to give great depth of spoke tenons and a separate shoulder *e*, for the spokes to shoulder and rest thereon; 3rd. In connection with the axle arm the lubricator grooves *F* *G*; 4th. The combination of dust and dirt prevent ing chambers *J* *L*, washers *K* *M*, axle collar *d* and retaining nut *M*, with the combination of chambers *J* *L*, washers *K* *M*, axle collar *d* and grooves *F* *G* *H* *I*; 6th. A wheel having spokes with alternating straight and tapering tenons all being driven into mortises; 7th. The tightening plate *N* with two sockets or chambers *L* *L*; 8th. The deep annular chamber *H* of the axle arm *d* for giving flexibility and elasticity to the latter; 9th. The box *E* and flanged band *E* *K* having bevelled faces *e* *L*; 10th. The oiling groove *e* located in the rear side of the axle; 11th. The chamber *J* provided with groove *e*; 12th. The collar *d* having the groove *ds*; 13th. The chamber *L* having the groove *L*; 14th. The nut *M* having on its inner face the groove *m*; 15th. The two part nuts *M* *m*.

No. 6937. Improvements on Pen and Pencil Cases.*(Perfectionnements aux porte-plumes et porte-crayons.)*

Camillus M Johnson, New York, U. S., 9th January 1877, for 5 years.

Claim.—1st. The combination with the tubular slotted case A and operating bands *d e f* of the pencil holders B D arranged one within the other and to slide from one end of the case A together with the knur K arranged to slide from the opposite end of the case; 2nd. In combination with the slotted case A, the pen holder B provided with the guiding ears C or their equivalent in combination with the pencil holder D arranged to slide within the pen holder and rest in contact with the said ears; 3rd. In combination with the slotted case A and operating pins *g* and with the pencil holder D arranged to slide within the pen holder, the pen holder B provided with the slot or opening E.

No. 6938. System of Ventilation, Refrigeration, &c. (Système de ventilation, réfrigération, &c.)

John J. Bate, Brooklyn, N. Y., U. S., 9th January, 1877, for 5 years.

Claim.—1st. The process of preserving meat during transportation and storage by enveloping the same in a covering of fibrous or woven material and subjecting it when thus enveloped to the action of a current of air of suitably low temperature; 2nd. A refrigerator constructed with a germ absorbent of fibrous or woven material provided for use in connection with a current of air of suitably low temperature caused to pass through or to circulate within the refrigerator; 3rd. The combination with a building, room or apartment of a fan blower and a fibrous material capable of absorbing the germs of disease, incipient decay, &c., from atmospheric air.

No. 6939. Improvements in Piano-Fortes.*(Perfectionnements dans les pianos-fortes.)*

Joseph Herald, Hamilton, Ont., 9th January, 1877, for 5 years.

Claim.—1st. In combination with a piano bridge of a cap to impinge on the strings on a bridge; 2nd. In combination with a piano a cap composed of wooden plate D or its equivalent and the metallic plate F conformed to the bridges A G the lower one to impinge on the strings F on the bridge, the whole secured by a screw H passing between each pair or trio of strings; 3rd. A strap of cloth a rubber or other yielding substance interposed between the plates D and E which causes uniform pressure in all states of the atmosphere.

No. 6940. Improvement on Hubs.*(Perfectionnement des moyeux.)*

William Corrie, Rochester, N. Y., U. S., 9th January, 1877, for 5 years.

Claim.—Subjecting the band to steam heat at high temperature and applying the same over the hub steamed sufficiently to soften the surface without expanding it.

No. 6941. Improvements on Corn Brooms.*(Perfectionnements aux balais de bouque.)*

James D. Dresser, Brantford, Ont., 9th January, 1877, for 5 years.

Claim.—1st. The band B made of tin or other suitable metal having the groove C formed in it and crumpled or drawn up at ends D; 2nd. The maleable iron or other suitable metal castings G jointed by rivets I and having projections H in the jaws to fit groove C in band B, also ring K by which castings G are held as required.

No. 6942. Apparatus for Preserving Meats, Fish, &c.*(Appareil pour conserver les viandes, le poisson, &c.)*

Alexander Walker and Charles N. Armstrong, Montreal, Que., 9th January, 1877, for 5 years.

Claim.—1st. The combinations of bottom *a*, plate *d* and sides *c*; 2nd. The combination of the bottom *a*, plate *d*, sides *c* and steam pipe *f* entering at both ends of the space *e*.

No. 6943. Improvements in First and Intermediate Drivers.*(Perfectionnements aux conducteurs-moteurs raiuoux et intermédiaires.)*

William D. Westman, Toronto, Ont., 9th January, 1877, for 5 years.

Claim.—The mechanical movement obtained by the combination and arrangement of the wheel B pulleys C and D, the belt E and the axles B₁ C₁ and D₁.

No. 6944. Improvements on Ear Mufflers.*(Perfectionnements aux oreillers.)*

William Abbott, Esq., Pa., U. S., 9th January, 1877, for 5 years.

Claim.—1st. The combination of the head piece A having the bends *a b* at each end and the pad frames B B provided with the perforated plates or ears *d d*; 2nd. In combination with the head piece A and swivelled pad frames B B, the hooks *h h* for locking the ear muffler when folded together.

No. 6945. Improvements on Clothes Scourers.*(Perfectionnements aux planches à laver.)*

Henry Carter, Aylmer, Ont., 9th January, 1877, for 5 years.

Claim.—The board A having rubber or other flexible strips B or rows of brush and two vertical handles C on its upper face for its manipulation, and cleat E on its rear edge for securing the clothes.

No. 6946. Cement. (Ciment.)

Robert G. Fraser, Halifax, N. S., 9th January, 1877, for 5 years.

Claim.—The use of Talcoose stone in the manufacture of cement and the combination of it with lime stone, both being calcined and pulverized in the proportion mentioned.

No. 6947. Improvements on Dumb Stoves.*(Perfectionnements aux poêles sourds.)*

William McGuire, Uxbridge, Ont., 9th January 1877, for 5 years.

Claim.—1st. The introduction of a fire box F into a dumb stove or heater; 2nd. The combination of the fire box F and hot air tubes D E and F.

No. 6948. Combined Strainer and Funnel.*(Entonnoir-coulair.)*

Joseph Pfeifer, Pittsburgh, Pa., U. S., 9th January 1877 for 5 years.

Claim.—A removable section A D and independent perforated disc B with flange B₁ constructed to fit together in combination with funnel C.

No. 6945. Improvements on Hoop Shaving Machines.*(Perfectionnements aux machines à planer les cercles.)*

Stillman Parker, Altoona, Pa., U. S., 9th January, 1877, for 10 years.

Claim.—1st. The combination of a pair of feed rolls, a pair of converging side planes and one or more edging tools; 2nd. The combination of a pair of feed rolls provided with pressure springs the adjustable converging side planes and the edging tools; 3rd. The grooved feed rolls; 4th. The side planes D D in combination with the flanged triangular block C and the table or plate B; 5th. The combination of the feed rolls, the converging side planes and the deflectors or guards 1 1.

No. 6950. Dust Guard for Railway Carriages.*(Garde-poussière de voitures de railroutes.)*

Edward Leverich, New York, U. S., 9th January, 1877, for 5 years.

Claim.—A series of pivoted deflectors *c c* arranged upon the exterior of a railway carriage.

No. 6951. Improvements on Water Filters.*(Perfectionnements aux filtres à eau.)*

Isidor Braek, Philadelphia, Pa., U. S., 9th January, 1877, for 5 years.

Claim.—1st. The filtering disc composed of two pieces *a* and *d* of felt or other filtering material and a rubber ring D lapped over the edge of the disc; 2nd. The combination of the two pieces *a* of felt or equivalent material the intervening piece *b* of wire gauze and the rubber ring D; 3rd. The filter casing composed of two parts B B each part consisting of the screw thimble *e*, grate *f* and sheet metal body *d* secured to the thimble lapped over the edge of the grate and forming with the latter a flange *m*.

No. 6952. Improvements in Seed Drills.*(Perfectionnements aux semoirs-traceurs.)*

Joseph W. Reid, Hamilton, Ont., 9th January, 1877, for 5 years.

Claim.—1st. In combination with the frame of a seed drill of an adjustable wheel G; 2nd. The roller F; 3rd. The covers M M; 4th. The ratchet H and pawl I for adjusting the wheel G; 5th. The hopper E provided with a sliding shuttle J, the said shuttle having a sliding plate *a* under it and operated by a screw rod K for gauging the size of the seed opening; 6th. The mechanism employed or its equivalent for moving the shuttle J consisting of the combination of the rod *g*, roller *f*, standard I, spring d catch or hook, *i*, curved rod *e*, spring K₁, and operated by the pins *h* on the roller F.

No. 6953. Improvements in Slide Valves.*(Perfectionnements dans les tiroirs de vapeur.)*

Elijah Leonard, London, Ont., 9th January, 1877, for 5 years.

Claim.—A slide valve having a steam way *n* which will conduct the exhaust steam from the steam ports *c c* at or near the end of the cylinder to the exhaust port *e* extending lengthways of the cylinder.

No. 6954. Gate and Door Spring and Holder.*(Bressort et loquet de porte et de barrière.)*

Manning Brown, Collingwood, Ont., 9th January, 1877, for 5 years.

Claim.—The combination of the flat coil spring and adjustable cap or holder.

No. 6955. Improvement in Sewing Machines.*(Perfectionnement dans les machines à coudre.)*

Andrew Wilson, (Assignee of Alexander Kay), Hamilton, Ont., 12th January, 1877, for 5 years.

Claim.—1st. In combination with a sewing machine of a vertical connecting rod provided with a vertical slot G through which the shaft A passes and provided with jaws or lugs *e* between which revolves an eccentric to move the said rod perpendicularly; 2nd. The combination of the eccentric D, rod B, collar C, crank F, rocker shaft E, shuttle driver H, shuttle carrier O operated by the shaft A for driving the shuttle.

No. 6956. Improvements on Spinning Wheels.*(Perfectionnements aux rouets.)*

John Brown and John Freeman, Harmony, N. S., 12th January, 1877, for 5 years.

Claim.—1st. The combination contained in shaft H; 2nd. The hand shaft D; 3rd. The brake I, 4th. The treadle G, lever K and connecting band H H.

No. 6957. Improvements on Stoves.*(Perfectionnements aux poêles.)*

James R. Reid and John N. Cooper, (Assignees of George N. Palmer) Elmira, N. Y., U. S., 12th January, 1877, for 5 years.

Claim.—1st. The combination of the following elements to wit: The oven A surrounded with flues B B B₂ B₃ extending from side to side without interruption the fire box C ocated as shown and delivering its gases about mid-height of the oven, the independent dampers *b* and *f*, the former being perforated and having slide *d* to accurately graduate the draft through the direct flue and the discharge flue E; 2nd. The combination with the fire box

C, the flues B B' and the perforated damper b with its slide d of the register m. 3rd. The hinged perforated damper b having the slide d arranged in the flue B' for the purpose of more thoroughly regulating the amount of heat in its passage around the oven.

No. 6958. Improvements in Skates.

(*Perfectionnements aux patins.*)

Francis C. Ireland Laehute Que. (An inventor with and Assignee of William A. Leggo), 12th January, 1877, for 5 years.

Claim—1st. In combination with any roller skate stands projecting downward from the boot or boot plate and having formed in their lower parts rectangular slots set obliquely through which pass the axes of the rollers which are also rectangular in section and are held in place by springs so as to give a yielding resistance to the action of the skate. 2nd. In combination with the boot plate of any ice or roller skate the clamps N N' formed on the double plates M M' and tightened to or loosened from the boot by the action of the nut H operating through screw K and links L. 3rd. In combination with the boot plate of any skate the plate Q with converging slots R and clamps N, all operated by the turn nut H working through the screw K. 4th. In combination with the bearing projections T formed on the foot plate A, the heel clamps P formed on the plate O operated through the screw K, by the nut H.

No. 6959. Improvements on Stove-Pipe Thimbles.

(*Perfectionnements aux douilles de tuyau de poêle.*)

Charles Inward and Charles G. Skiff Riceville, Iowa U. S., 12th January, 1877, for 5 years.

Claim—An improved stove pipe thimble formed of the inner part A provided with the collars a and the outer part made in two parts B C, the one part B being made in one piece with the part A, and the other part C being hinged at one edge to the edge of the part B and secured at its other edge by the hand screw D and the lugs b c.

No. 6960. Improvements in Toys.

(*Perfectionnements dans les jouets.*)

Sophia B. Marshall, (Assignee of William T. Foster), Trenton, N. J., U. S., 12th January, 1877, for 5 years.

Claim—The ball or sphere A consisting of two sections b b', the section b being provided with a stem f and made reversible. 2nd. The combination of the sections b b' of the movable plug g having a conical head. 3rd. The combination of the hollow section b' and the detachable conical grooved section b constituting a peg top. 4th. The cone h detachable from the section b having a stem f extending through the cone. 5th. The combination of the sections b, its stem f and hollow cone h. 6th. The combination of the sections b b' forming the ball A and having conical openings i n. 7th. The hollow holder B adapted to the sphere A and provided with a reel I. 8th. The hollow holder B notched at m and adapted to form a whistle. 9th. The hollow holder B notched and provided with a reel, whereby it may be employed both as a trumpet and whistle. 10th. The perforated ring p having pins s and arranged on the stem of the ball holder. 11th. The general construction and arrangement of parts and all said parts separately adapted for use separately and together forming a combination toy.

No. 6961. Improvements on Skates.

(*Perfectionnements aux patins.*)

Charles Brewster, (Assignee of Charles G. C. Simpson), Montreal, Que., 12th January, 1877, for 5 years.

Claim—1st. The combination of the spindle n, nut o, links p and sliding clamps k. 2nd. The combination of the spindle n, nut o, link p and clamps k with the heel clamp r.

No. 6962. Improvements on Oil Cabinets.

(*Perfectionnements aux réservoirs à huile.*)

Hull A. Sharp Hopewell, N. B., 16th January, 1877, (extension of No. 1293), for 5 years.

Claim—1st. An oil cabinet consisting of a tank or holder with an upper case sink or inclosure and provided with a pump and a vent tube or waste receiving orifice either with or without the gauge rod combined. 2nd. The combination of the tank C, the compartment E, pump G G', waste receiving orifice E u; 3rd. An oil cabinet consisting of a reservoir or tank C and a compartment or sink E provided with a pump, a stand or can supporter O and gauge rod. 4th. An oil cabinet consisting of a reservoir or tank C and a compartment or sink E provided with a pump, a can supporter O and waste receiving orifice E u. 5th. The combination of the adjustable stand or can supporter O with the discharge pipe or nozzle of the pump oth. The combination and arrangement of the stand O and the centralizer Q with the discharge pipe or nozzle of the pump. 7th. Providing the piston of a pump with means or devices viz. a rod g handle h check chain R and weight or gravitating power or its equivalent, whereby the fluid contained within the tank or holder may not only be drawn and accurately measured but be automatically discharged into a can or receptacle. 8th. An oil cabinet having the general external form and construction shown, that is to say with the body formed of rectangular shape with the inclined front and the inclined cover.

No. 6963. Art of Burning Soft Coal and Consuming Smoke with Apparatus used therefor.

(*Art de brûler le charbon et consommer la fumée avec appareil pour cet objet.*)

Hubert R. Ives, Montreal, Que., 16th January, 1877, (extension of Patent No. 1299), for 5 years.

Claim—1st. The novel art of passing a mingled blast of air and steam through the fire bars d by passages e and by passages p to unite with the products of combustion. 2nd. The novel combination of the plates A B and C, bars D, passages E, bearings B' hearth g g', opening H pipes I, opening K, pipe L, plates M and N, projections o passage P, coating p carriers Q, chambers R, chamber S, bottom T.

No. 6964. Improvements in Washing Machines. (*Perfectionnements aux machines à laver.*)

Cornelius E. Haynes, Hamilton, Ont., 19th January, 1877, for 5 years.

Claim—1st. In combination with a washing machine of the corrugated zinc rollers D E which may be made either hollow or solid. 2nd. In combination with a washing machine the guards F F'. 3rd. In combination with a washing machine an extension rod H of the wheel I attached thereto.

No. 6965. Adjustable Gate Post.

(*Posteau mobile de barrage.*)

James Emond, Kincardine, Ont., 19th January, 1877, for 5 years.

Claim—1st. An adjustable auxiliary post B in combination with a stationary post A. 2nd. The post B provided with rubbing blocks F F' and fastened to the horizontal pieces C C' passing through the slot D in combination with the rail E and pin G for the purpose of holding the spring H against the post A. 3rd. The post B provided with a row of pegs K and connected to the post A having a corresponding row of pegs J in combination with the lever L. 4th. The post B connected to the post A and provided with a spring H in combination with a row of pegs I or their equivalent.

No. 6966. Improvement on Railway Cross Ties. (*Perfectionnement des traverses de railvoies.*)

Daniel S. Whittenhall and Abner H. Miller, Chicago, Ill., U. S., 19th January, 1877, for 15 years.

Claim—1st. A longitudinal ribbed or corrugated sheet metal cross tie provided with slots or rail seats. 2nd. A longitudinally ribbed or corrugated sheet metal cross tie provided with slots or rail seats and with lateral flanges at its base. 3rd. The combination of a longitudinally ribbed or corrugated sheet metal cross tie with base stays or clamps.

No. 6967. Improvements on Liquid Filters.

(*Perfectionnements aux filtres.*)

James Foley, Montreal, Que., 19th January, 1877, for 5 years.

Claim—1st. The cylinder A for containing filtering materials having an air chamber B at its top; 2nd. Cylinder A provided with removable cases H M and N for containing the filtering material. 3rd. The cylinder A, cases H M and N and air chamber B having a valved aperture C. 4th. The cylinder A having air chamber B and the water spaces G and J above and below the filtering material; 5th. The arrangement of the water service pipes F K and I valved and having connections with the water spaces G and J. 6th. A liquid filter for connection with a pressure system of water works or local gravity supply having inlet and outlet pipes F I. 7th. The application and connection to water works service pipes of a filter to be used under pressure. 8th. The use and application of a filter to be used under pressure and connected with elevated cisterns, tanks or vessels, for the purpose of filtering water and other liquids.

No. 6968. Improvements in Washing Machines. (*Perfectionnements dans les machines à laver.*)

Henri Labrecque, Montreal, Que., 19th January, 1877, for 5 years.

Claim—1st. In combination with box A and scrubbing board F, the frame G carrying two sets of rollers K and L of differing diameters; 2nd. The combination with the box A the guides M.

No. 6969. Machine for Making Spirally Formed Tubes.

(*Machine à faire les tuyaux spiraux.*)

John B. Root, New York, U. S., 19th January, 1877, for 5 years.

Claim—1st. The combination of the revolving mandrel, the stationary guide frame for guiding the work on to the mandrel at an acute angle and the seaming roll. 2nd. In combination with the revolving mandrel the head ring and flanging rolls by means of which the edges of the blank or skelp are shaped for forming a spiral lock joint while passing over the roll frame. 3rd. The spiral guide upon the heel of the mandrel made detachable and adjustable. 4th. In combination with the roll frame the vertically adjustable mandrel bearing, which permits the use upon the same machine of mandrels of different diameters. 5th. In combination with the revolving mandrel a guide band or chain encircling it. 6th. The trucking lever and grooved shoe or equivalent mechanism for closing up and inclining the folds of the seam preliminarily to the action of the seaming roll. 7th. The guide or roll frame pivoted to the bed of the machine so as to be adjustable to different angles relatively to the mandrel. 8th. In combination with the pivoted and adjustable guide or roll frame the swivelled hanging and sliding brackets as a means of conveying power from the main shaft to the rolls of the guide frame.

No. 6970. Machine for Making Spirally Formed Tubes.

(*Machine à faire les tubes spiraux.*)

John B. Root, New York, U. S., 19th January, 1877, for 5 years.

Claim—1st. The spirally reciprocating saddle. 2nd. In combination with the spirally reciprocating saddle an adjustable clamping and feeding mechanism constructed and arranged to operate so as to be carried by and reciprocate with the saddle and at the same time be adjustable relatively thereto for pipe of different sizes. 3rd. In combination with the spirally reciprocating saddle and an adjustable clamping and feeding mechanism partaking of the various movements of the saddle the adjustable lever bar which supports the lever of the holding or riveting mechanism; 4th. The combination of the spirally reciprocating saddle a grooved adjusting block E and the intermediate guide blocks c and d or their equivalents as a means of regulating the longitudinal movement of the various parts. 5th. The spirally reciprocating clamping bar or former. 6th. The combination of the spirally reciprocating bar or former G and the guide band or strap. 7th. The combination of the spirally reciprocating bar G and a clamping device constructed and arranged to move in unison therewith. 8th. The combination of the spirally reciprocating bar G and punch constructed and arranged to move in unison therewith. 9th. In combination with a spirally reciprocating feeding frame F, the pressure rod H and pressure shoe I; 10th. The combination of

the guide frame and a spirally reciprocating clamping and feeding mechanism constructed to operate so as to advance the work with an intermittent motion; 11th. The combination in a machine for making pipe of a spirally reciprocating clamping and feeding mechanism by means of which the work is advanced intermittently, and a stationary holding or rivetting mechanism acting alternately with the feeding mechanism; 12th. The combination of the connecting rod L with the lever O of the clamping and feeding mechanism and the lever K of the holding or rivetting mechanism, the former regulating the relative movement of the latter; 13th. In combination with the lever O of the feeding mechanism, the connecting rod L and the lever K of the holding mechanism, the main lever M arranged to operate in combination; 14th. In combination with holding and rivetting lever the ring P.

No. 6974. Improvements on Stump Extractors. (*Perfectionnements aux arrache-souches.*)

John Brokenshire, Kingston, Ont., 19th January, 1877, for 5 years.

Claim.—1st. The construction of the frame or str. p H H in combination with the cross bar I I and pins or axles J J on which the wheels and sheaves revolve. 2nd. The arrangement of the pinion wheels B B and D D and the gear wheels C C and E E together with the sheaves F F and G G, all working together in combination within the frame H H.

No. 6972. Improvement on Egg Boxes.

(*Perfectionnement des boîtes à œufs.*)

Andrew H. Lucas, St. Louis, Mo., U. S., 19th January, 1877, for 5 years.

Claim.—1st. The box or case A having perforated top sides and hinged front cover A' in combination with the series of drawers B B having air passages or apertures d through their bottoms and provided with cup shaped cavities or apertures e for the eggs to rest in. 2nd. The combination of the perforated boards or plates C with the perforated box or case A, the front cover A' and the drawers B composed of separated slats and provided with egg holding cavities or apertures.

No. 6973. Improvements on Sky Lights.

(*Perfectionnements aux claires-voies.*)

Daniel Condon and Edwin C. Seely, Port Medway, N. S., 19th January, 1877, for 5 years.

Claim.—1st. The cylinder or other figure K with cap O actuated by screw F. 2nd. The cylinder or other figure K with cap O actuated by screw F and by the springs N.

No. 6974. Improvements on Vehicle Spring Braces.

(*Perfectionnements des esseliers à ressort de voitures.*)

Charles E. Rice, Dunmore, Pa., U. S., 19th January, 1877, for 5 years.

Claim.—The spring F constructed with a whole or partial circle at one end and applied to the spring bar or spring and to the reach.

No. 6975. Improvement on Hammers for Dressing Stones.

(*Perfectionnement des marteaux à rhabiller les meules.*)

Alexander McDouald, Belmont, Mass., U. S., (Assignee of John Hartnoll), 19th January, 1877, for 5 years.

Claim.—1st. The stone dressing hammer head A provided with the slit b and the tapering recess a; 2nd. The stone dressing hammer head A provided with the slit b and the tapering recess a and jaws d d. 3rd. The stone dressing hammer head A provided with the slit b and the tapering recess a and jaws d d, and the collar C applied to such head. 4th. The stone dressing hammer head provided with the slit b and the tapering recess a, the wedge D and the series of chisels B; 5th. The stone dressing hammer head A provided with the slit b, the tapering recess a and jaws d d, the series of chisels B and the wedge D. 6th. The stone dressing hammer head A provided with the slit b, the tapering recess a and jaws d d, the series of chisels B, the wedge D and the collar C. 7th. The stone dressing hammer head recessed and slotted and provided with the wedge chisels and bridge piece.

No. 6976. Improvements on Horse Hay Rakes.

(*Perfectionnements aux râtaux à cheval.*)

William J. Lane, Millbrook, and William H. Field, Portchester, N. Y., U. S., 19th January, 1877, for 5 years.

Claim.—1st. The automatic dumping apparatus combining the foot lever N, torsion rod P, lifting toe Q, link R, stationary link T, friction strap S, friction pulley U and wheel hub B; 2nd. The metallic rake tooth holding bar grooved on its inner side perforated with a series of tooth receiving holes and adapted for application to the side of the rake head; 3rd. The combination of the wheel hub B having the reduced parts u, the friction pulley A and the loose bearing washer w; 4th. The torsion rod P hung so as to be free to move laterally toward and from the friction pulley U; 5th. The combination of the torsion rod P lifting toe Q and links R and T and friction strap S; 6th. The combination of the torsion rod P, slotted lever O, shifting bolt W having a shifting connecting pin v and stop y; 7th. The bolt w and positive stop z for controlling the extent of the elevation of the rake head and relieving the compression straps and intermediate mechanism; 8th. The hand dumping lever J applied in the relation specified to the foot treadle of lever K in combination with a rake head provided with mechanism which will when brought into use enable the draft of the horse or team to raise the teeth and dump the load without moving said hand lever along with the foot lever or treadle.

No. 6977. Improvements on Baggage Checks.

(*Perfectionnements aux contre-marques des bagages.*)

Ray F. Livermore, Port Henry, N. Y., U. S., 19th January, 1877, for 5 years.

Claim.—1st. A baggage check composed of pivoted and locked face plates with recesses of opening and of adjustable station indicating disks placed between the face plates; 2nd. The combination of the pivoted face plates having slots at joints opposite to the pivot with closing check strap attached to one plate and passed through the slots of both plates; 3rd. One of the turning face plates pivoted with a tip a, to bind on the other plate for closing them; 4th. The combination of one face plate having centre and circumferential pins with the station indicating disks having notches at the circumference to secure the position of the disks after adjustment.

No. 6978. Spark Arresters, Heater and Soot Gatherers.

(*Arrête-flammèches, poêles sours et urrête-suc.*)

Daniel Hawkesworth, Acacia Valley Tannery and Henry Colford Halifax, N. S., 19th January, 1877, for 15 years.

Claim.—1st. A series of interior plates arranged circumferentially and spirally so as to overlap each other at the sides and joints, the plates a, when made removable; 2nd. The combination of a smoke stack or drum A with a system of circumferentially and spirally arranged plates that increase in size from the bottom upward; 3rd. The combination of a lower set of concave or bent plates having recesses d for the accumulation of the solid products of combustion with an upper set of spark arresting plates a; 4th. In combination with the drum or stack A a series of circumferentially and spirally arranged soot arresting plates when the said plates are made so as to form recesses d for the accumulation of the soot.

No. 6979. Improvements on Skate Fastenings.

(*Perfectionnements aux ajustages des patins.*)

Everett H. Barney, Springfield, Mass., U. S., 19th January, 1877, for 5 years.

Claim.—1st. The swinging bar clamp E in combination with the pivot N and foot plate B of a skate; 2nd. The combination of the pivot N having an elongated head, and the draw bar H provided with a corresponding slot in its forward end as a means of securing a clamp to a skate; 3rd. The movable heel clamp F of a skate in combination with a draw bar H provided with a conical nut actuate said clamp; 4th. A direct acting or longitudinal draw bar H passing through the heel clamp F and secured to and actuating the forward clamp of a skate; 5th. A longitudinal draw bar H made in two parts and adjustable one part with the other at L, the forward part attached to the forward clamp E and the rear part passing through the heel clamp E and arranged to actuate both the said clamps.

No. 6980. Improvements on Water Sprinklers. (*Perfectionnements aux arroseurs.*)

Joseph Baker, Kingston, Ont., 19th January, 1877, for 5 years.

Claim.—A water sprinkler A having handle B, perforated top C and opening D.

No. 6981. Improvements on Time-Pieces.

(*Perfectionnements aux chronomètres.*)

Seth E. Thomas, New York, U. S., 22nd January, 1877, for 5 years.

Claim.—1st. The clock case represented having a general truncated conical form with front legs M performing the don't function of confining means for the face and of legs to hold the clock upright; 2nd. The construction of the casing with the spun ring A and its turned in front rim A' glass B, mat or distance ring Y and face C, so that the fastenings M in confine and release the whole; 3rd. A clock case having the ring A and thick back D with the attached setting button E and winding handle G recessed therein; 4th. In combination with the clock case A and time adjusting lever H h, the pivoted plate I provided with an engaging ring J adapted to perform the two functions of removably covering the regulating slot and of forming a suspension ring for the clock.

No. 6982. Improvements in Fence Posts.

(*Perfectionnements aux piquets de clôtures.*)

Gillum Shelton, Normal, Ill., U. S., 22nd January, 1877, for 5 years.

Claim.—1st. A fence post A with the pointed end a and twisted at b, in combination with the barb holder C with the two barbs D D.

No. 6983. Improvements on Tubes.

(*Perfectionnements aux tuyaux.*)

John B. Root, New York, U. S., 22nd January, 1877, for 5 years.

Claim.—A pipe or tube which has a joint or seam passing spirally around it, such joint or seam being formed by the overlapping and rivetting of the edges of the blank.

No. 6984. Improvements on Gas Consuming Furnaces.

(*Perfectionnements des fourneaux consommant les gaz.*)

Kingsbury M. Jarvis, Peabody, Mass., U. S., 22nd January, 1877, for 5 years.

Claim.—1st. The flues in the side walls and openings at the sides over the bridge wall in combination with the flues in the flame bed and the perforated plate and chamber f all arranged with reference to each other and the boiler whereby the heated air is introduced and enmeshed with the gas or flame in the combustion chamber; 2nd. In combination with the chamber h of the tapering pipes o adapted to permit the expansion of the hot air passing through the pipes into the chamber; 3rd. The flues in the wall of the fire chamber in combination with the flues l in the side walls of the combustion chamber, both adapted to discharge hot air at or near the bridge wall; 4th. In combination of the tapering pipes o and the downwardly and backwardly inclined flame bed adapted to permit the introduction and expansion of hot air for combustion of the gases in the gradually enlarged combustion chamber e; 5th. The flues in the side walls and flues in the flame bed to introduce hot air into the combustion chamber in combination with the downwardly and backwardly inclined flame bed.

No. 6985. Improvements in Coal Ash Sifters.

(*Perfectionnements aux cribles à cendre de charbon.*)

Jacob Brooks, Dover, N. H., U. S., 22nd January, 1877, for 5 years.

Claim.—The combination of the sieve b with the vessel A provided with the cross bars b b, handles a and the lid C.

No. 6986. Improvements on Bottle Stoppers.

(*Perfectionnements aux bouchons de bouteilles.*)

Stephen S. Newton, Binghamton, N. Y., U. S., 22nd January, 1877, for 5 years.

Claim.—1st. The combination of the flanged tube A having its interior screw threaded, the screw threaded plug B provided at its lower end with

a broad head *b* and having ports *c* just above said head and a washer *d*, whereby when the stopper is closed the washer abuts against the lower end of the tube and the ports lie within the bar of the tube.

No. 6987. Improvements in Hat Cord Fasteners.

(Perfectionnements aux machines a ajuster les gorgorettes de chapeaux.)

Fitz E. Phillips, Barre-Center, N. Y. U. S., 22nd January, 1877, for 5 years

Claim.—In combination with a button disk the eye shank *B*.

No. 6988. Method of, and Apparatus for, Raising Sunken Ships, &c.

(Art de relever les vaisseaux, &c., coules bas et appareil pour cet objet.)

Perceval W. Davis, London, Eng., 22nd January, 1877, for 5 years.

Claim.—The reservoir *a* having partition *b*, water pipes *c*, air pipe *d*, cord *e*, water valve *f* or *f'*, sockets *g*, rings *h* and hooks *i*.

No. 6989. Improvements on Fanning Mills.

(Perfectionnements aux taveurs.)

Thomas Barnes, Harwick, Ont., 22nd January, 1877, for 5 years.

Claim.—1st The gauge board *B*, divider *C*, screen *D* and gauge board *F* in combination with the sieve *A* and spout *E*; 2nd. The zinc plates and sieve *G* *H* *I* return board *J* and elevating sieve *K* in combination with the screens *A* and *L*, and spout *E*; 3rd. The perforated zinc riders *M* *N* in combination with zinc plates sieve *G* *H* *I* and sieves *A* and *K*; 4th. The movable arm *Q* and strips *a* in combination with the hopper *O* and slide *P*; 5th. The upper roller *S*, lower rollers *U* *V*, endless bands *T*, scrapers *V*, attachment strips *W* and metal guards *U* in combination with the spout *X*; 6th. The chain *Z*, toothed wheel *C*, pulley *D*, and slide *E*; in combination with driving wheel *A* and crank *B*; 7th. The striker *F* in combination with supporting wire *G*, and screen *L*; 8th. The screw rods *d* with crank ends *e* in combination with guard *f*.

No. 6990. Improvements on Sewing Machines.

(Perfectionnements aux machines a coudre.)

John McCloskey, New York, U. S., 22nd January, 1877, for 5 years.

Claim.—1st. The combination with the shaft *A* which operates the needle bar of the crank wrist pins *a* *a* arranged at right angles or thereabouts to each other and the correspondingly arranged wrist pins *a* *a*; 2nd. The needle shaft *B* constructed with double cranks *b* *b* arranged at an angle to each other in combination with the coincident eccentrics *B* *B*, driving shaft *B* and connecting rod *B* *B*; 3rd. In combination with the needle shaft *C* of a sewing machine the eccentrics *c* *c* *c* *c* and rods *c* *c*; 4th. The perforated endless belt or band *L* in combination with the pulley *E* *E* carrying studs or projections on their perimeters; 5th. The combination in a sewing machine with the shafts *I* *I* of the inter-ening shaft *I* and the links *I* *I*; 6th. The combination of the crank *F* on the driving shaft *F* the oscillating arm *F* in the rock shaft *F* and the connecting rod *F* *F*; 7th. The crank *D* on the needle actuating shaft *D*, the connecting rod *D* *D* working on the fulcrum *D* *D* and the universal joint *D* *D* connecting the rod *D* *D* with the bar or shaft *C* *C* arranged to operate the thread hook; 8th. In combination with one or more of the shafts actuating the stitch forming devices of a sewing machine the differential device *K*; 9th. A four motion feed positive in all its motions and adjustable for varying the length of the stitch; 10th. A four motion feed positive in all its motions and adjustable for varying its vertical throw; 11th. A feed supported at both ends by and swinging upon the pivoted links or arms *G* *G*; 12th. In combination with the swinging feed *G* the rods *G* *G* and link *G* *G*; 13th. In combination with the swinging feed *G* the lever *G* and the devices connecting said lever with said feed; 14th. The combination of an adjustable feed with a eccentric arranged to give simultaneous vertical and horizontal movement to said feed; 15th. The combination with a positively actuated four motion feed and an eccentric actuating the same, of two straps concentric with each other upon the eccentric and one within the other; 16th. In combination with the feed of a sewing machine the adjustable rod *G*; connected by the links *G* to the said feed, and the eccentric *G* actuating said rod through the strap *G*; 17th. In the sewing machine feed the adjustable lever *G* connected by the rod *G* to the feed in combination with the strap *G* of the eccentric *G* giving movement to the said lever; 18th. In a sewing machine feed a series of needle points provided to pass simultaneously through the fabric for operation; 19th. The pivoted link *N*; provided with an adjustable socket *n*, the rod *N* and rod *N* in combination with two eccentrics and the feed; 20th. The eccentric having its strap pivoted to the arm *N* of the feed *N* in combination with an eccentric actuating the link *N*; through the medium of the rod *N*; 21st. In a sewing machine feed double or compound eccentric in combination with a compound eccentric ring or strap; 22nd. The link *O* and pitman *O* in combination with the crank *O* of the needle shaft and the needle bar *O*; 23rd. The jointed connecting rod *O* *O* comprising the part *O* *O* pivoted to the crank *O* and the part *O* *O* pivoted to the needle bar in combination with the rod *O*; 24th. The jointed connecting rod *O* *O* comprising the part *O* *O* pivoted to the crank *O*, and the part *O* *O* pivoted to the needle bar in combination with the rod *O*; 25th. The angular lever *O* *e* and link *O* *e* connected with the crank *O* of the needle operating shaft and with the needle bar and with the outer end of the arm of said angular lever working in a movable bearing; 26th. The pivoted slotted arm or lever *O* *d* connected with the needle bar *I* in combination with the crank of the needle actuating shaft; 27th. The take up mechanism comprising the slotted swinging arm and the crank wrist of the rock shaft actuating the needle bar, said parts being combined in relation with each other and suitably placed eyes; 28th. The needle thread take up *e* *e* attached in its rear to a rocking arm *e* *e* and constructed for operation by an eccentric *E* on the needle shaft; 29th. A looper arranged to pass through the needle loop in combination with the hook or shuttle arranged to pass behind the needle loop and through the secondary loop of the looper; 30th. A revolving double hook in combination with a bobbin and an eye pointed needle having two complete sewing operations for each revolution of said hook; 31st. The hook *J* constructed with the lip or shoulder *j* and the notch *j* terminating in the sloping recess; 32nd. A rotary hook constructed with a circumferential flange at its rear or inner side; 33rd. In a rotary hook sewing machine the fixed plate or shoulder *j* arranged in relation with the needle and hook; 34th. The rotary hook connected with a circular recess or chamber *J* in its rear side in

combination with the fixed plate or shoulder *J*; 35th. The rotary hook *J* provided with the curved guide *j*; 36th. The bobbin clamp *j* fixed to the rotating hook *J* and arranged in relation with the bobbin; 37th. The combination of the supplemental hook *J* with the rotary hook *J*; 38th. A needle solid at its point but split through its main length and constructed with a loop above its eye; 39th. The bobbin *Q* constructed from a single piece of metal; 40th. The bobbin *Q* formed with its peripheral opening on one side of its central plane; 41st. The travelling shuttle *r* provided in the guide or raceway *R* and actuated by the arm *R*; 42nd. The springs in combination with the travelling shuttle *r* provided in the raceway *R*; 43rd. The shuttle *r* constructed with the tubular stem and bobbin; 44th. A shuttle sewing machine in which the needle has two descents to one complete and no movement of the shuttle; 45th. In a shuttle sewing machine a double-ended shuttle constructed for use and operation; 46th. The combination to a lock stitch sewing machine of the following elements, a needle arranged to descend in front of the bobbin seated between the hook and the needle, and a rotating hook having its nose constructed and arranged to open the needle loop to pass the same astride of the bobbin; 47th. The ring slide constructed with the needle groove whereby the ring slide is enabled to retain the bobbin in due relation with the hook and the needle without interfering with the descent of the latter; 48th. The thread hook *C* on the bar or shaft *C* arranged to move the thread hook around the bobbin *C* without itself turning on its own axis; 49th. The bobbin *C* arranged within the receiver or holder *c* *c* and in relation with the thread hook *C* arranged to move around the said bobbin; 50th. In a shuttle sewing machine a revolving shuttle arranged to operate in a horizontal plane; 51st. In a rotary shuttle machine the rotating shuttle, the horizontal circular raceway and a rotating disk or its equivalent, the said parts arranged in relation with each other and with the needle; 52nd. The combination with the rotating disk or its equivalent by which circular motion is given to the shuttle of the central catch or stud; 53rd. In combination with the vertical shaft *S*, from which circular motion is given to the shuttle in the horizontal raceway and with the horizontal driving shaft *S*, the intermediate link *S* connected with the aforesaid shafts by universal joints.

No. 6991. Improvements on Refrigerators.

(Perfectionnements aux refrigerants.)

John J. Bate, Brooklyn, N. Y., U. S., 22nd January, 1877, for 5 years.

Claim.—1st. An ice box provided with one or more openings which form an inlet to the chill room and with one or more other openings arranged to provide an outlet to the said chill room in combination with suitable air forcing mechanism and motive power for operating the latter; 2nd. An air conduit combined with the ice box and the chill room in such manner as to carry the air from the chill room into the ice box; 3rd. A conduit arranged in such relation with the ice box and with the chill room as to conduct the air from the ice box into the chill room, in combination with the ice box provided with one or more openings giving an inlet to the chill room, and one or more other openings giving an outlet to the said chill room from the ice box; 4th. The trunk or conduit having two or more branches, the latter provided with vertical tubes or passages for the passage of the air from chill room to the ice box, in combination with the ice box provided with one or more openings giving an inlet to the chill room and one or more other openings giving an outlet to the said chill room; 5th. The ice box constructed with a single opening at its top or bottom, as the case may be, and with a single opening or system of openings extending across its opposite ends in combination with the chill room; 6th. In a chamber provided above a false ceiling in the chill room, an air forcing mechanism, and an ice box provided with a lateral opening extending partially or entirely across it at or near its bottom, in combination with the chill room or refrigerating chamber; 7th. The walls constructed of the boards *a*, layers of plastering paper *b*, studs *c*, with the air spaces between.

No. 6992. Improvements on Grain Separators and Scourers.

(Perfectionnements aux separateurs-actroyirs des grains.)

William P. Clifford, Elmwood, Ill., U. S., 22nd January 1877 for 15 years

Claim.—1st. A grain separator and scourer worked by a suction fan and separate draft channels for producing respectively air currents for the grading of the grain supplied from shaker for clearing the grain from dust in the scouring cylinder and for the grading of the scoured grain on leaving the scouring cylinder; 2nd. The combination of the suction fan with the entrance trunk *F*, grading chambers *C*, conducting trunk *F* and suitable regulating valves; 3rd. The combination of the suction fan *E* with the scouring cylinder *D*, exit-points *e*, conducting trunk *e* and regulating valve *e* for clearing grain from dust during scouring; 4th. The combination of the suction fan *E* with the discharge spout of scouring cylinder *D*, trunk *H*, grading chamber *I* and regulating valve for grading the scoured grain; 5th. The combination of vertical trunk *F* having lateral partition *g* with entrance screen *g*, communicating opening and valve *g* and exit screen and spout *g* for conducting off grain before scouring.

No. 6993. Improvement in Blotting Rulers.

(Perfectionnement des rubans-bouteurs.)

Mark P. McElkoney, Montreal, Que., 22nd January, 1877 for 5 years

Claim.—1st. The method of making rulers to be used in tracing straight lines by forming them in two halves longitudinally, each being enveloped by blotting paper and held together by rings; 2nd. In a ruler to be used for tracing straight lines the two semi-cylindrical halves *A* with the blotting paper *B* cut into the requisite shape for folding around the two halves *A*, the ring *C* adapted to keep the two halves *A* and blotting paper *B* firmly together but removable when required; 3rd. The combination of the semi-cylindrical pieces *A*, blotting paper *B* and rings *C* to form a blotting ruler.

No. 6994. Improvements on Milk Pans and Coolers.

(Perfectionnements aux boites-refrigerants a lait.)

Frank W. Pierce, Rodman, N. Y., U. S., 22nd January, 1877, for 10 years.

Claim.—1st. A water pan having a swivelling outlet tube *E* or its equivalent; 2nd. Water pan *B* having central zig-zag partition *C* and partitions *D*, *D*, its outlet being at one end and its inlet being at the other; 3rd. A pan having a tortuous passage formed to end and provided with an inlet funnel at one end and an adjustable outlet at the other; 4th. The combination of inlet funnels *F* *F*, tortuous passages *d*, *d*, and swivelling outlet tube *E*; 5th.

The combination of milk pan A having outlet tube A₁ with water pan B having an orifice B₁ inner packing b₁ outer packing b₂ and compressing nut b₃.

No. 6995. Improvements in Railway Switches.

(*Perfectionnements dans les aiguilles de railroutes.*)

Justin J. Golden, Toronto, Ont., 22nd January, 1877, for 5 years.

Claim.—1st. The several parts comprising device in duplicate for operating the switch at each end of a siding, the said parts of each device consisting of the pulley H with handle h endless cable I semi-circular bars A B C, pulleys b, springs b₁, stops a₁, slots b₁, bracket e on arm E and attached to cable I, 2nd. In combination with the above specified parts in clause 1 and with each other the handle K cable L pulley W, levers D D₁ and link d₁ for locking and unlocking the arm E by pressing down bar B with stops a₁, 3rd. The signal lamp F₁, signal board G. 4th. The pawl N with spring r, in combination with the handle K and cable L.

No. 6996. Improvements in Sleigh Knees.

(*Perfectionnements aux courbes de traîneaux.*)

Peter Filman, Burton, Ont., 22nd January, 1877, for 5 years.

Claim.—A cast iron sleigh knee A constructed with the lugs c c at the bottom, the projections C at top, the projections E E, ribs a a and b b also horizontal lugs e e, the said knee fastened to the bench D and rays G by bolt H nut g, bolts F F and nuts f f.

No. 6997. Improvements in Car Movers.

(*Perfectionnements aux moteurs de wagons.*)

James G. Wilber, Kilbourn, Wis., U. S., 22nd January 1877, for 5 years.

Claim.—1st. The combination of the knuckle joint B, jaw A and piece C. 2nd. A jaw A knuckle joint B, piece C in combination with hook D.

No. 6898. Machine for Making Metal Screw Rings for Jars.

(*Machine à faire les bouchons à écrous de pots.*)

John N. Tarbox, Hamilton, Ont., 22nd January, 1877, for 5 years.

Claim.—In combination with the male die of a machine for making metal screw rings or caps of a friction roller H or a series of them attached thereto in a recess G and operated in connection with the female die for producing the thread on metal rings or caps for fruit jars, coal oil cans and all other vessels on which screw caps can be used.

No. 6999. Improvements on Railway Switches.

(*Perfectionnements aux aiguilles de railroutes.*)

Asahel Quimby, Salem, Mass. U. S., 22nd January, 1877, for 5 years.

Claim.—1st. The levers N N₁ hung and connected to slotted plates O and Q which are arranged between the rails A B in combination with the slotted plates S and U connected to switch rails H₁ H₂ and the lever R connecting plates S and U and plates O Q, 2nd. The plate P₁ on operating rod c₁ having hole i to receive the bent end of handle d₁.

No. 7000. Improvements on Organs.

(*Perfectionnements aux orgues.*)

John A. Smith, North East, Pa., U. S., 22nd January, 1877, for 5 years.

Claim.—1st. The vertically oscillating stop register O O₁ arranged immediately in front of the name-board to thereby indicate the position of the stop corresponding therewith, 2nd. In combination of the stop key M with the catch r s and a spring; 3rd. The combination of key M and rod R with the register lever A or its equivalent; 4th. The construction of the knee lever a with the bracing plate b, 5th. The catch lever f in combination with the releasing lever C, 6th. The register O and register lever X in combination with the slotted name-board E. 7th. The quadrangular set of levers m m m m₁ in conjunction with the knee lever a.

No. 7001. Improvement in Snow Shovels.

(*Perfectionnement dans les pelles à neige.*)

Henry V. Searle Hamilton Ont. 22nd January 1877, for 5 years.

Claim.—The combination of a sheet steel or iron blade A with its tapering turned up edges B, the wooden stay C and the handle D.

No. 7002. Improvements on Mining Machines.

(*Perfectionnements aux machines à miner.*)

Francis M. Lechner Waynesburg and Joseph A. Jeffroy Columbus, Ohio U. S., 22nd January, 1877 for 5 years.

Claim.—1st. The cuttershaft C in combination with the adjustable teeth c₁ 2nd. The combination with the shaft C and teeth c₁ of the supporting shoes C₁ provided with the projecting cutting spurs c₂ and shoes C₂, 3rd. The combination with carriers B and cutter shaft C of the supporting shoes C₁ and guiding plates D. 4th. The combination with the posts B₁ B₂ of the adjustable sliding frame G, shafts E and F and chain F₁, 5th. The combination of the cutter shaft C chain F₁, shafts E and F and chain F₁, 6th. The combination with the stationary frame and sliding frame carrying the cutter shaft and its driving mechanism of the feeding screw shaft N, 7th. The combination with the feeding screw shaft N having one end mounted in the adjustable frame G of the slotted standard O and the adjustable screw threaded plate o₁, 8th. The combination with the feeding screw shaft N of the bearing having a throat n, and the pivoted clamping plate O₁, 9th. In combination with the cutter shaft C and driving chain E the narrow cutting tooth e.

No. 7003. Improvements on Gates.

(*Perfectionnements aux barrières.*)

Robert E. Stephens, Owen Sound, Ont., 22nd January, 1877, for 5 years.

Claim.—1st. The combination of the two bars C D with the hinge still B and with the top and bottom bars of frame A to form an aperture for a small or wicket gate. 2nd. The angle brace E for the purpose of keeping the gate frame from sagging.

No. 7004. Improvements on Handles for Ploughs, &c.

(*Perfectionnements aux mancherons de charrues.*)

William S. Babcock, Plainfield, Ct., U. S., 22nd January, 1877, for 5 years.

Claim.—1st. A circular wooden hand piece for plough handles bent or turned to itself and secured as shown. 2nd. The annular metallic hand piece for plough handles having formed upon it a socket for receiving the handle. 3rd. An annular hand piece for plough handles composed of one or more curved pieces of wood secured to the end of the wooden handle by metallic sockets. 4th. An annular hand piece for plough handles consisting of the curved end of the handle and a curved metallic piece secured to the said curved end and to the body of the handle. 5th. The finger I in combination with a metallic hand piece of a plough handle. 6th. The checks l m in combination with the handles O O₁.

No. 7005. Improvements on Railway Cars, &c.

(*Perfectionnements aux voitures de railroads, &c.*)

Bernard J. LaMothe, New York, U.S., 22nd January, 1877, for 5 years.

Claim.—1st. The metallic car platform made of longitudinal and transverse tubes or rods secured together at the intersection by wrought iron bands. 2nd. The band e for securing the tubes or rods a and b made of a strip of sheet metal wound up and reinforced at its ends by the band e. 3rd. The plate g at the end of the car platform retained upon the longitudinal tubes a by such tubes being passed through the said plate and spread in combination with the transverse tubes b of the platform. 4th. The draught bar h passing through the plate g and provided with the stops or collars 2 and 3 in combination with circular coil l of wire or band metal forming a double acting spring that is connected with the said draught bar and the block d. 5th. The bars or tubes i in combination with the intersection blocks m of varying length placed together so that the said bars l or tubes n converge or diverge. 6th. The two bars or tubes o passing through between the two bars or tubes i in combination with the intersection blocks m that are made to receive and sustain such bars or tubes; 7th. The trussom beam and transverse bearers for the metallic platform made of flattened tubular metal cases with or without a filling of wood through which the longitudinal rods or tubes pass in combination with the braces a; 8th. The metallic sheets forming the coverings of the car with a bend bent at the edges and combined with junction strips of sheet metal bent to receive such bends. 9th. The metallic plate folded to form double longitudinal ribs s in combination with the flooring planks t inserted between said ribs and secured. 10th. The metallic frame of a car, the tie bands e of metal slipped upon the range or tubes in combination with said tube and with filling blocks driven into the spaces between the tubes.

No. 7006. Improvements on Milk Waggons.

(*Perfectionnements aux voitures de laitiers.*)

Alonzo L. Fish, Cedarville, N. Y., U. S., 22nd January, 1877, for 5 years.

Claim.—1st. The body of a wagon for carrying milk and for other purposes suspended under both the front and rear axles from springs located upon said axles by bolts or rods pivoted over the longitudinal central line of the wagon to allow it to swing sideways. 2nd. A milk wagon having its body suspended under both the front and rear axles from bolts and springs located over its central line and the guide plate attached to the front axle to retain the king bolt and allow it to oscillate transversely with the wagon. 3rd. A milk wagon having its body suspended under both the front and rear axles, the transverse diagonal rods suspended centrally from the top of the springs and the longitudinal rods to connect the rear axle with the said body and allow it to oscillate.

No. 7007. Improvements on Carriages.

(*Perfectionnements aux voitures.*)

Anarella A. Winsor, Boston, Mass., U. S., 22nd January 1877 for 5 years.

Claim.—The carriage body A composed of the two separate portions A B pivoted together and having the supports F F of the front axle D connected with front portion B so as with it to be capable of being turned up and over the body portion A, in the folding carriage body the dasher portion B pivoted to and arranged in the other portion A so as to be capable of being folded back within said portion A the carriage body composed of the two portions A B pivoted together and provided with the locking hasp M and arm button N and having the supports F F of the front axle D connected with the front portion B so as with it and the wheels E to be capable of being turned up and over the body portion A in combination with the body part A and the hood P applied thereto the dasher part B pivoted to the said part A and connected with the front axle so that when the part B is folded back the said axle its wheels and their supports shall be moved within or under the hood and over the body part A; the hood standards provided with holes a to receive the rear axle in combination with the carriage body composed of the two separate portions A B pivoted together and having the supports F F of the front axle connected with the front portion B, all being so that when the part B with the front wheels m, y be back within the body and hood the front axle may be employed for in winning such parts in position and for holding the rear wheels along side of the standards.

No. 7008. Improvements on Envelopes.

(*Perfectionnements aux enveloppes.*)

Patrick C. Carter, Kingston Ont. 22nd January 1877, for 5 years.

Claim.—1st. A flap A and a fastening loop b, button or other device for securing the envelope or bag. 2nd. A flap with two gummings for successive use and a means for cutting the flap between the gummings. 3rd. Having a series of gummed flaps for successive use. 4th. A supplementary gummed flap k; 5th. The perforations l.

No. 7009. Improvements on Steam Boilers.

(*Perfectionnements aux chaudières à vapeur.*)

Cullin W. Reed, Chagoin Falls Ohio U. S. 22nd January, 1877, for 5 years.

Claim.—1st. The combination in a steam boiler or generator of a water chamber, the central space of which forms the fire pot of the boiler and a steam chest, the central space of which forms a coking chamber, the two

being connected by a series of tubes and the intervening space forming a combustion chamber in which the gaseous portions of the fuel are concentrated and consumed, 2nd. The combination of the fire pot and coking chamber constructed to have an upward and downward draft respectively with an intermediate combustion chamber communicating with the escape flues in which chamber the flames of the burning fuel are concentrated for the purpose of intensifying the heat around the steam chest, or that portion of the boiler in which the steam is finally generated in order to produce dry steam; 3rd. The combination of the annular chamber N, the combustion chamber above the same and tortuous flues leading from said combustion chamber to the discharge flue K, 4th. The combination in a steam boiler of the steam chamber G and magazine G' provided with flues D forming a coking chamber above the combustion chamber and leading into the same; 5th. The combination of the outer cylinder, the inner cylinder, the steam chest or chamber, the connecting flues and the intervening combustion chamber, 6th. In combination with the magazine G, the flue L leading to the escape flue of the furnace for leading off the light gases that may collect between the removable covers T L.

No. 7010. Improvements on Gas Governors.

(*Perfectionnements aux regulateurs a gaz.*)

Robert Soper and Seymour W. McFarggart, London, Ont., 22nd January, 1877, for 5 years.

Claim.—The plates C F H having studs a c and perforations d, in combination with a hair packed chamber E and connecting tubes B G.

No. 7011. Improvement on Injectors.

(*Perfectionnement des injecteurs.*)

John T. Hancock, Jamaica Plains, Mass. U. S., 21th January, 1877, for 5 years.

Claim.—1st. The combination of an injector for forcing water into a boiler and a second injector communicating with a well, and also communicating with and supplying water to the first; 2nd. The combination of two communicating injectors, one communicating with a well or other supply of water, and the other with the boiler and a valve whereby steam may be directed to either or both; 3rd. The combination of the steam chamber E, jet tube a, the interval g, combining tube b h and the valve m, the whole comprising a lifting apparatus 4th. The combination of the steam chamber D, the jet tube c, the annular space e, and the combining tube d d' the whole comprising a transmitting apparatus 5th. The groove e in combination with a combining tube d d' and a delivery tube f.

No. 7012. Single Plate Carriage Spring.

(*Resort de voiture a une seule lame.*)

John B. Armstrong, Guelph, Ont., 21th January, 1877, for 5 years.

Claim.—1st. The tapered steel plate A B cyano-reversa or ogee shape fastened together by the rivets C or their equivalent, passing through eyes formed on the outside of the said plates by the ends a and b b'; 2nd. In combination with a single plate spring the rivets C with semi-circular or semi-oval finished heads.

No. 7013. Improvements on Brushes.

(*Perfectionnements aux pinceaux.*)

Henry Rosenthal, New York, U. S., 24th January, 1877, for 5 years.

Claim.—1st. A series of separate sections which are applied to a brush head and held in position by a side plate or plates. 2nd. The manner of securing the bristles in the ferrules by filling their ends with a composition of dust, wetting the mass with a cement or varnish and then applying heat so as to cause the cement or varnish to penetrate and dry the mass into a solid mass. 3rd. In a flat brush two rows or series of sections that are secured to a single head by means of a center strip g and side plates e. 4th. A brush having a smaller one placed in its center.

No. 7014. Improvements in Nut Locks.

(*Perfectionnements aux noix de serré.*)

Daniel Dull, Spring, Pa., U. S., 24th January, 1877, for 5 years.

Claim.—The spring when bevelled on its side and so shaped that in combination with three or more bevelled nuts by contact with a side of each nut, the bevelled spring and bevelled nuts are mutually bond in position.

No. 7015. Improvements in Pulp Engines.

(*Perfectionnements aux machines a pulpe.*)

Alvin Gardner Windsor, and Robert Forsyth, Montreal, Que., 24th January, 1877, for 5 years.

Claim.—1st. In combination with any disc or ring carrying cutting surfaces a dovetail groove holding such cutting edges and accessible at one or more points of the circumference; 2nd. In combination with the disc or wheel F, the knives H and keys I held in groove f and secured in place by locking key; 3rd. In combination with the well C, the knives D and keys E carried in groove c and held in place by locking key.

No. 7016. Improvement on Coats.

(*Perfectionnement des habits.*)

Albert P. Silva, Elmira, N. Y., U. S., 21th January, 1877, for 5 years.

Claim.—In combination with the coat P the supplementary collar A and mittens B.

No. 7017. Improvements on Wringing

Machines. (*Perfectionnements aux machines a essorer.*)

James K. Dugdale, White Water, Ind., U. S., 21th January, 1877, for 5 years.

Claim.—1st. In combination with platform B provided with guide pin E the device D; 2nd. The detachable hinges composed of pin g, plate b and sockets or indentations c, in combination with bench A and platform B provided with guide pin E and elongated eye or slot n; 3rd. The combination of outer form of plate F with inside cuts forming wings k k and z z, and bend with standards S S provided with rolls F F'; 4th. The combination of the adjustable lever platform or frame B provided with detachable hinges at C, guide pin E and eye or slot n, draw rolls G G and beam H with bench frame A provided with standards S S, wringer rollers F F', curved water trough T and sliding rack U.

No. 7018. Improvement on Umbrellas, &c.

(*Perfectionnement des parapluies, &c.*)

Alfred A. Valentine, New York, and Henry A. Morrison, Brooklyn, N. Y. U. S., 24th January, 1877, for 5 years.

Claim.—1st. In an umbrella or parasol the divided collar constructed with an annular groove recess or projection adapted to fit over an annular projection or into an annular recess of the rib or the umbrella or parasol and secure the covering of the umbrella thereon by means of a screw tip; 2nd. In an umbrella the combination with the ribs thereof provided with annular shoulder near the extremities of the divided collars with or without the elastic washer adapted to fit over the same and secure the covering thereon, and the screw tips for securing said collar in place. 3rd. In combination with the ribs of an umbrella, parasol or sun shade having a recess or groove near its outer end of a clamp or clamps adapted to be placed over the ends of the ribs and secure the covering of the said article upon the ribs without the use of stitching said clamp or clamps being used in connection with a covering and ribs with or without an interposed stay string material.

No. 7019. Ammoniacal Process for the Manufacture of Carbonates of Soda.

(*Procédé à l'ammoniac pour la fabrication des carbonates de soude.*)

Ernest Solvay, Brussels, Belgium, 24th January, 1877, for 5 years.

Claim.—1st. With reference to the distillation of ammonia in the combination of the distilling column A, false bottoms X, overflow pipes M, tubes N, regulating apparatus R F, cock G, refrigerator P S, compartment O, the distilling boilers B B B, baskets p, the distributor C, pipes T L T L', T a V V' and l and cock z, the combination of the distilling column A B, reservoirs P P', P' P' and basket G, pipes q, cocks r r', R; the combination of the boilers B B, B' B', lower part B of the distilling column A B, the process of treating the ammoniacal liquid with quicklime; the process of utilizing the heat given off by the hydration of the lime for the distillation of the liquid, also the process of applying a vacuum to the said distillation effected by the interposition of intermediary vessels. 2nd. With reference to the preparation of the ammoniacal brine in the process of purification by the use of carbonate of ammonia which is rendered efficacious in small quantities by the previous conversion of salts of magnesia into salts of lime. The combination of the dissolver of ammonia A, reservoirs R R, cocks r r', decanter D, pipe L, scraper M, pipe I, filter B, perforated cylinder O, and refrigerator C, the combination of the apparatus that is to say, the combination of the dissolver A, reservoir X, pipe L, tank X', pipe t, valves S S', float weighted lever L, the combination of the cylinders C, tubes l t, and screw H, the processes of purification of the brine combined with the process of the absorption of ammonia with or without dosing, with or without filtration and with or without subsequent refrigeration, the process of adding sea salt to purified brine for the purpose of restoring the saturation which had previously disappeared in the precipitation of the noxious salts, the process of purifying brine already formed by the addition to such brine of the ammonia required for the manufacture of soda in order to precipitate therein the noxious salts, the process of dosing the ammonia by means of apparatus operating independently of the density of the liquids and directly according to their bulk; 3rd. With reference to the addition of natural brine and salt in the absorbing apparatus the process of introducing natural brine near the outlet of the gas into an apparatus in which the ammoniacal brine previously formed is subjected to the reaction of carbonic acid, the process of introducing an excess of chloride of sodium in a solid state into such an apparatus by any means; 4th. With reference to the dissolution of hydrochlorate of ammonia, the process of applying heat to the ammoniacal liquid from the absorber after the reaction produced by the carbonic acid is completed for the purpose of dissolving the crystals of hydrochlorate of ammonia in such condition that it will not interfere with the low temperature required for the reaction; 5th. With reference to the filtration of the liquid containing bicarbonate of soda. The combination of the rotary reservoir A, grating G, bottom plate P, table P', chest C, reservoir R B R' R'' and pipes T T', T' T' V and V', the combination of the rotary drum or reservoir separated into compartments A, chest B and pipes T T', T'.

No. 7020. Improvements on Bake Pans.

(*Perfectionnements aux casseroles de boulanger.*)

John Gilbert, Newark, N. J., U. S., 24th January, 1877, for 5 years.

Claim.—A pan made with straight sides and ends B C, and scalloped corners D to enable the pan to be brought into shape by a single pair of dies and in one operation.

No. 7021. Improvements in Curtain Fixtures.

(*Perfectionnements dans l'ajustage des rideaux.*)

Albert Fontagne, and Harvey E. Randell, Cincinnati, Ohio, U. S., 20th January, 1877, for 5 years.

Claim.—1st. The brake or shoe attached to the bracket rigidly or attached to the bracket by means of a spring. 2nd. The combination of the bottom arm having two bevelled rollers or discs fitted to furnish bearings on which the grooved cord wheel or pulley revolves, and also to guide the cord in operating and attached to the bracket stationary or actuated by a spring. 3rd. The two discs or rollers so bevelled as to fit the groove of the cord wheel and press upon the cord.

No. 7022. Method of Utilizing Petroleum for Generating Steam, &c.

(*Méthode pour utiliser le pétrole pour produire la vapeur, &c.*)

Giovanni B. de Ferrari, Genoa, Italy, and James J. Jarvis, Boston, Mass., U. S., 1st February, 1877, for 5 years.

Claim.—1st. Mixing the oil with asbestos or tale in a suitable chamber or receptacle when it is ignited; 2nd. The combination of asbestos or tale with petroleum or mineral oils for the purpose of consuming the petroleum or oils as fuel. 3rd. The combination of a reservoir for oil, a receptacle for asbestos or tale and a pipe to conduct the oil from the reservoir to the asbestos or tale in such receptacle; 4th. In a steam boiler a receptacle for asbestos or tale, a reservoir for oil and a pipe or pipes to conduct oil to the asbestos or tale in the receptacle; 5th. The receptacle for asbestos or tale, a reservoir for oil and a pipe connecting them in combination with a pipe to conduct a jet of steam into the flame produced by igniting the oil commingled with the asbestos or tale.

No. 7023. Improvement in Glass Fruit Jars.*(Perfectionnement dans les pots à fruits en verre.)*

John N Tarbox, Hamilton, Ont., 1st February, 1877, for 5 years.

Claim.—In combination with a fruit jar A and screw cap C of the globular shaped hollow glass stoppers D with opening G provided with an annular rug or projection E and an annular recess F.**No. 7024. Improvements on Sail Hanks.***(Perfectionnements aux bagues de voiles.)*

Mme Mèlin, St Malo France, 1st February, 1877, for 5 years.

Claim.—1st. A ring a and arm or clasp b hinged thereto. 2nd. The combination of the ring a, hinged arm or clasp b and opening f. 3rd. In combination of the ring a, hinged arm or clasp b, opening f, lugs g and recess h. 4th. The combination of the ring a, hinged arm or clasp b, opening f, lugs g, recess h and hole i.**No. 7025. Improvements on Boot Lacings.***(Perfectionnements aux lacets des chaussures.)*

Thomas A. McDonald, Durham, N. S., 1st February, 1877, for 5 years.

Claim.—1st. The combination of a short lace E passing in paired eyelets B and hooked to the studs D, the contraction of the folds of said lace E being sufficient to tighten the boot and their expansion being also sufficient to unfasten the boot with the fastener C; the eye f of which the tip end h of the short lace E always remains; 2nd. The combination of the fastener C having the eye f in which the tip end h of the short lace E always remains with the paired eyelets B clinched to the flap b, the short lace E passing into the paired eyelets B to form the loops F and the studs D clinched to the fly a of said boot A on which studs D the loops F are hooked.**No. 7026. Improvements in Door Fastenings.***(Perfectionnements aux fermetures des portes.)*

John Cairns, Peter Cairns and George Cairns, (Assignee of John Russell), Barrie, Ont., 1st February, 1877, for 5 years.

Claim.—1st. The combination of lever E, slide bars C and latch K. 2nd. The combination of lever E, slide bars C and latch K of the long guard L and pivot bolt F.**No. 7027. Improvements on Steam Boilers.***(Perfectionnements aux chaudières à vapeur.)*

John W. Hard and Charles W. Lloyd, Decorah, Iowa, U. S., 1st February, 1877, for 5 years.

Claim.—In a steam boiler the horizontal sections consisting of circular tubes B set in equal divisions and tubular cross arms C provided with hollow bosses b d, bolts h and nuts i, in combination with the surrounding shell D, annular deflecting plates m and triangular deflecting plates n.**No. 7028. Improvements in Derricks.***(Perfectionnements dans les treuils.)*

Nicholas K. Connolly, St. Catharines, Ont., 1st February, 1877, for 10 years.

Claim.—The extension of shaft C C, the addition of the boom fall drum B, the ratchet wheel I with its dogs J and the brake K.**No. 7029. Improvements on Bale Tying Apparatus.***(Perfectionnements aux appareils à lier les ballots.)*

Stacy D. Parly, Cleveland, Ohio, U. S., 1st February, 1877, for 5 years.

Claim.—1st. The frame A having arms G H I, the shaft F having the grooves J connected with the slots K and the bevel gears E L, the shaft C and crank D. 2nd. The two ends of the wire twisted together and locking them.**No. 7030. Improvements on Spring Beds.***(Perfectionnements aux lits à ressorts.)*

John McGuire, Uxbridge, Ont., 1st February, 1877, for 5 years.

Claim.—1st. The combination of the block E, springs C C and slats B D, 2nd. The combination with the spring slats of the supports H and K and the studs G G and J J.**No. 7031. Improvements on Stereotyping Machines.***(Perfectionnements aux machines à sténotyper.)*

George Blair, Prescott, Ont., 1st February, 1877, (extension of Patent No. 683), for 5 years.

No. 7032. Improvements in Rotary Harrows.*(Perfectionnements aux herbes rotatoires.)*

Samuel H. Shaw, St. Thomas, Ont., 1st February, 1877, (extension of Patent No. 1424), for 5 years.

Claim.—1st. The hinged joint J in its arrangement and combination with the axle K, sleeve I and spindle E. 2nd. The clamps M arranged and oper-

ating for retaining the spindles E to the axle K. 3rd. The manner of retaining the sleeves I to the spindles E by the springs P provided with pins passing through the sleeves and entering a slot in the spindles. 4th. The manner of retaining the sleeves H and I to the spindles by the bolt Q passing through the stay V and bar H. 5th. The loops N N provided with sleeves for attaching the draw bars to the cross bars Y.

No. 7033. Process for the Manufacture of Malt Syrup.*(Procédé de fabrication du sirop de brèche.)*

Oscar F. Boomer and Henry R. Randall, Brooklyn N. Y. U. S., 1st February, 1877, for 15 years.

Claim.—1st. In the manufacture of malt syrup or extract the treatment of the grain or other starch bearing substance reduced to a suitable degree of fineness with an alkaline solution. 2nd. The extraction of malt syrup or extract from the grain or starch bearing substance after the same has been subjected to a mashing process subjecting the mass to pressure in bags, cloths or any suitable fabric or material.**No. 7034. Improvements on Voltaic Plasters.***(Perfectionnements des emplâtres voltaïques.)*

Warren B. Potter, Boston Mass. U. S., 2nd February, 1877, for 5 years.

Claim.—1st. The voltaic plates secured to the back of the plaster and holes cut through the plaster above the plates so that when in use, the plaster shall lie between the plates and the skin.**No. 7035. Improvements on Drying Kilns.***(Perfectionnements aux fours de sécherie.)*

Edwin V. Wingard, Kennett Square, Pa. U. S., 2nd February, 1877, for 5 years.

Claim.—1st. A drying kiln having each one of its arches provided with a drain for the removal of moisture. 2nd. In a drying kiln the combination of an arch or drying compartment with a depressed longitudinal drain. 3rd. The combination of a drying arch or compartment A: having at its ends inclined passages a a which serve both to allow the exit of moisture and the passage of a current of air. 4th. The combination of combustion chamber C with passage a and dampers or cut off slides E, for the purpose of regulating the heat in arches A: 5th. The combination of inclined passages a with dampers E and exhaust chamber D. 6th. The combustion chamber C having a hollow wall perforated at c and c'. 7th. Exhaust chamber D having hollow wall D: with perforations d and d'.**No. 7036. Improvement on Knife Scourers.***(Perfectionnement des nettoyeurs de coutellerie.)*

Samuel M. Haskell, Essex, Mass., U. S., 2nd February, 1877, for 5 years.

Claim.—The combination of the case A notched in its opposite sides with the sectional or elastic block B slitted crosswise and provided with the cavity c.**No. 7037. Improvements on Washing Machines.***(Perfectionnements aux machines à laver.)*

Alphon H. Calkins, Chicago, Ill., U. S., 2nd February, 1877, for 5 years.

Claim.—1st. The combination of the pivoted rocking supporting plates F and a sectional roller jacket, the sections of which are independent of each other and are provided with bearings in the supporting plates so as to have a limited rocking motion independently of the rocking movement of the supporting plates. 2nd. The combination of the corrugated roller C and yielding jacket of rollers constructed in sections which are independent of each other and have bearings in pivoted rocking supporting plates; 3rd. The combination of the rocking supporting plates F and pieces H and rollers G. 4th. The combination of swinging arms D pivoted to the frame of the machine, and the roller jacket having its supports therein. 5th. The combination of the swinging arms D pivoted to the standards B supporting plates F and end plates K. 6th. The combination of the handle E and the pivoted arms D. 7th. The combination of the pivoted arms D jacket of rollers supported thereon, handle E and springs I connected to the frame of the machines; 8th. The combination of the handle E supported in the arms D, springs I and plates c c' provided with a series of holes and rigidly attached to the standards of the machine.**No. 7038. Improvements on Steam Generators.***(Perfectionnements aux générateurs de vapeur.)*

Lydie F. Penshaw, Cohasset, Mass., U. S., 2nd February, 1877, for 5 years.

Claim.—The upper water body G G in combination with the series of pipes K and M.**No. 7039. Improvements on Churns.***(Perfectionnements aux barattes.)*

Francis Hughson, Raleigh, Ont., 2nd February, 1877, for 5 years.

Claim.—The movable frame A in connection with cog wheel E, union F, crank J, winch D, connecting rods G, guide pieces V, dash rods C and clashes I, for the agitation of cream and the production of butter in common upright churn.

Lists of Patents issued up to 21st February, 1877, but not yet Officially published in the Patent Office Record.

- No. 7010. J. R. Peel, London, Ont., "Drawing Instrument," 2nd February, 1877.
- No. 7011. H. Gawley, Maidstone, Ont., "Set Gear," 2nd February, 1877.
- No. 7012. E. S. Lomax, New York, U. S. A., (Assignee of D. H. Mathias, Albany, U. S. A.), "Bale Tie," 9th February, 1877.
- No. 7013. J. Dyer, Norwood, Ont., "Crank Foot Power," 9th February, 1877.
- No. 7014. J. Tees, Montreal, Que., (Assignee of J. Hess, Buffalo, N. Y. U. S. A.), "Chair," 9th February, 1877.
- No. 7015. H. P. Smith, St. Catharines, Ont., "Blind and Double Window Combined," 9th February, 1877.
- No. 7016. T. Bell and S. Bell, (Assignees of J. Stephens), Montreal, Que., "Toe Protector," 9th February, 1877.
- No. 7017. G. W. Read, (Assignee of P. Pfeiffer, New York, U. S. A.), "Lumber Drier," 9th February, 1877.
- No. 7018. J. Stubbs, Mount Pleasant, Iowa, U. S. A., "Road Scraper," 9th February, 1877.
- No. 7019. J. H. Hodder, Aurora, Ill., U. S. A., "Writing Tablet," 9th February, 1877.
- No. 7020. G. Sweet, Dansville, N. Y., U. S. A. and J. Watson, Ayr, Ont., "Combined Reel and Rake for Harvester," 9th February, 1877.
- No. 7021. W. Leclinton, New York, U. S. A., "Scale Tang Cutlery," 9th February, 1877.
- No. 7022. J. J. Green, Pontiac, Mich., U. S. A., "Process of Making Steel and High Qualities of Iron," 9th February, 1877.
- No. 7023. E. Stroud, Riceford, Minn., U. S. A., "Combined Collar and Hame," 9th February, 1877.
- No. 7024. J. C. Cowles, Syracuse, N. Y., U. S. A., "Box for Pius, Postage Stamps and Matches," 9th February, 1877.
- No. 7025. F. N. Forster, Hamilton, Ont., "Art and Process of Finishing and Mounting Photographic Portraits and other Pictures," 9th February, 1877.
- No. 7026. H. Milson, Buffalo, N. Y., U. S. A., "Ozone Machine," 9th February, 1877.
- No. 7027. W. H. Rhodes, Elyria, Ohio, U. S. A., "Tree and Post Hole Digger," 9th February, 1877.
- No. 7028. H. Wandby, Toronto, Ont., "Stove-pipe Collar," 9th February, 1877.
- No. 7029. J. Carlton, Greenock, Ont., "Machine for Thinning Turnips Carrots and other Roots," 9th February, 1877.
- No. 7030. J. W. Price, Michigantown, Ind., U. S. A., "Wheat Drier and Moistener," 9th February, 1877.
- No. 7031. J. C. Schoonmaker, Hamilton, Ont., "Lightning Rod," 9th February, 1877.
- No. 7032. P. W. Peckham, New York, U. S. A., "Ash Sifter," 9th February, 1877.
- No. 7033. M. A. Caldwell, North East, Pa., U. S. A., "Combined Washer and Wringer," 9th February, 1877.
- No. 7034. R. Mitchell, Montreal, Que., "Service Box," 9th February, 1877.
- No. 7035. C. W. Woodford, Montreal, Que., "Horse-shoe Nail Finishing Machine," 9th February, 1877.
- No. 7036. J. M. Davies, Hamilton, Ont., "Lightning Rod," 9th February, 1877.
- No. 7037. W. H. Nanman, Dayton, Ohio, U. S. A., "Grain Drill," 9th February, 1877.
- No. 7038. C. Phelps, Rensselaer Falls, N. Y., U. S. A., "Holdback Attachment for Carriages," 9th February, 1877.
- No. 7039. R. W. Simpson, Montreal, Que., "Desk," 9th February, 1877.
- No. 7040. H. J. Beemer, Montreal, Que., "Spring Bed Bottom," 9th February, 1877.
- No. 7041. J. Lamb, Ottawa, Ont., "Re-sawing Machine," 9th February, 1877.
- No. 7042. D. H. Laune, and J. Laurie, Montreal, Que., "Boot and Shoe Cleaner and Polisher," 13th February, 1877.
- No. 7043. G. Lander, Chicago, Ill., U. S. A., (Assignee of F. T. Forbes, Chicago), "Pump," 13th February, 1877.
- No. 7044. J. Farrar, and H. Earle, jr., Montreal, Que., "Tobacco Cutter," 13th February, 1877.
- No. 7045. P. Dillon, Sherbrooke, Que., J. Cleary, Great Falls, N. H., U. S. A., and G. H. Bradford, Sherbrooke, Que., "Cann Making Machine," 13th February, 1877.
- No. 7046. W. H. Taylor, Baldwinville, N. Y., U. S. A., and S. Taylor, Hamilton, Ont., "Gig Saddle Tree," 13th February, 1877.
- No. 7047. T. DeWitt, Chatham, Ont., "Spring Bed Bottom," (extension of Patent No. 6760), 13th February, 1877.
- No. 7048. A. B. Crosby, Greene, Me., U. S. A., F. Amory, Beverly, Mass., E. W. Hannon, Haverhill, Mass., J. Wetherbee, Boston, Mass., J. G. Mitchell, Germantown, Pa., C. H. Crosby, Lisbon, N. H., and J. W. Beals, Boston, Mass., "Process for Working Gold and Silver Ores," 13th February, 1877.
- No. 7049. W. H. Barrett, Toronto, Ont., "Night Soil Deodorizer," 16th February, 1877.
- No. 7050. A. B. Cruickshank, Dundee, Scotland, "Apparatus for Disengaging Ships' Heat from the Lowering Tackles," 16th February, 1877.
- No. 7051. J. M. Livingstone, Merriton, Ont., "Railway Alarm," 16th February, 1877.
- No. 7052. W. Herlihey, and H. Dennis, Lindsay, Ont., "Improvements on Axles," 16th February, 1877.
- No. 7053. G. D. Bradley, Quebec, Que., "Kindling Taper," 16th February, 1877.
- No. 7054. G. W. Glazier, Salem, Mass., U. S. A., and O. E. Wail, Lynn, Mass., U. S. A., "Machine for Making Bobbins," 16th February, 1877.
- No. 7055. J. L. Johnston, Sherbrooke, Que., "Meat Extractor," 16th February, 1877.
- No. 7056. P. W. Carpenter, Harrison, N. Y., U. S. A., "Lubricator," 16th February, 1877.
- No. 7057. J. H. Valsey, St. John, N. B., "Envelope," 16th February, 1877.
- No. 7058. G. F. Simonds, Fitchburg, Mass., U. S. A., "Tempering and Forming Oven," 16th February, 1877.
- No. 7059. A. B. Lipsev, West Hoboken, N. Y., U. S. A., "Pulverizing and Disintegrating Machine," 16th February, 1877.
- No. 7060. F. Trulender, Hammersville, N. Y., U. S. A., and J. Warington, Jr., Gloucester, N. Y., U. S. A., "Horse Power," 16th February, 1877.
- No. 7061. P. W. Carpenter, Harrison, N. Y., U. S. A., "Nut Lock," 16th February, 1877.
- No. 7062. W. Andrews, Lisbon, Maine, U. S. A., and H. J. Hutchinson, Fayette, Maine, U. S. A., "Gauge Cuck," 16th February, 1877.
- No. 7063. H. Grist, Ottawa, Ont., (Assignee of J. Forbes, Halifax, N. S.), "Skate," (Extension of No. 1314), 16th February, 1877.
- No. 7064. H. Grist, Ottawa, Ont., (Assignee of J. Forbes, Halifax, N. S.), "Skate," (Extension of No. 1319), 16th February, 1877.
- No. 7065. H. Grist, Ottawa, Ont., (Assignee of J. Forbes, Halifax, N. S.), "Mode of attaching Skates to the Feet," (Extension of No. 1429), 16th February, 1877.
- No. 7066. G. W. Hunter, Philadelphia, Pa., U. S. A., "Lifting Jacks for Railroad Tracks," 21st February, 1877.
- No. 7067. O. Edwards, Florence, Mass., U. S. A., "Oil Stove," 21st February, 1877.
- No. 7068. O. B. Latham, Seneca Falls, N. Y., U. S. A., "Nut Lock," 21st February, 1877.
- No. 7069. T. Moore, E. Cutler, P. W. Anthony, B. M. Disher, and N. Nagel, Ridgeway, Ont., "Horse Power," 21st February, 1877.
- No. 7100. G. R. Ingalls, Abercorn, Que., "Milk Cooler," 21st February, 1877.
- No. 7101. T. H. Hicks, and T. H. Tracy, London, Ont., "Retort for the Evaporation of Oils, Tar, &c.," 21st February, 1877.
- No. 7102. R. P. Gillett and S. Coughran, Sparta, Wis., U. S. A., "Grinding Mill," 21st February, 1877.
- No. 7103. J. Eze, G. Stacy, and C. C. Cable, Montreal, "Smoke Consumer," 21st February, 1877.
- No. 7104. T. Woods, Nicholasville, Kent., U. S. A., "Stone Dressing Machine," 21st February, 1877.
- No. 7105. A. Krupp, Essen, Rhenish Russia, "Ordnance, &c.," 21st February, 1877.
- No. 7106. J. Hollway, London, England, "Process of Producing Metals or Metallic Alloys," 21st February, 1877.
- No. 7107. C. P. Hingham, Brooklyn, N. Y., U. S. A., "Compounded Wrought Iron and Steel," 21st February, 1877.
- No. 7108. W. Governlock, Susquehanna Depot, Pa., U. S. A., and C. Mannering, Stratford, Ont., "Steam Lubricator," 21st February, 1877.
- No. 7109. G. H. Millen, and W. Feely, Hull, Que., "Self-feeding Steam Boiler," 21st February, 1877.
- No. 7110. A. Huff, Chatham, Ont., "Milk Can," 21st February, 1877.
- No. 7111. W. H. Fisher, Selin's Groove, Pa., U. S. A., "Skate Sharpener," 21st February, 1877.
- No. 7112. J. N. Whitman, Pembroke, Me., U. S. A., "Machine for Reducing Railroad Rails to the form of Plates," 21st February, 1877.
- No. 7113. A. Pearl, Brooklyn, N. Y., U. S. A., "Cigar and Cigarette," 21st February, 1877.
- No. 7114. W. Reardon, Ottawa, Ont., "Broom Stand," 21st February, 1877.
- No. 7115. W. Fitch, and E. T. Fitch, (Assignees of G. B. Bristol), New Haven, Ct., U. S. A., "Trace Carrier," 21st February, 1877.
- No. 7116. R. P. Liston, Selma, Ill., U. S. A., "Churn," 21st February, 1877.
- No. 7117. J. J. Tyler, Brooklyn, N. Y., U. S. A., (Assignee of L. S. Chechester, New York, U. S. A.), "Improvements in Preparing Cereals for Food," 21st February, 1877.
- No. 7118. W. Scott, and W. Hutchinson, Ottawa, Ont., "Machine for Cutting, Cleaning and Finishing Oatmeal," 21st February, 1877.
- No. 7119. H. Wakeman, New York, U. S. A., "Flexible Tubing," 21st February, 1877.
- No. 7120. A. B. Mullett, Washington, U. S. A., (Assignee of J. Izatt, Brooklyn, N. Y., U. S. A.), "Chrome Steel Process," 21st February, 1877.
- No. 7121. W. Hewitt, Hamilton, Ont., "Buggy Shaft Guard," 21st February, 1877.
- No. 7122. W. Deering, Chicago, Ill., U. S. A., (Assignee of J. F. Steward, Plano, Ill., U. S. A.), "Harvesting Machine," 21st February, 1877.
- No. 7123. H. H. Snow, New Haven, Ct., U. S. A., "Display Card and Holder," 21st February, 1877.
- No. 7124. R. Ingnall and J. Hall, Toronto, Ont., "Railway Switch," 21st February, 1877.
- No. 7125. R. D. Milne, Santa Barbara, Cal., U. S. A., "Device for Equalizing the Leverage of a Crank Motion," 21st February, 1877.
- No. 7126. W. W. Wickes, (Assignee of J. J. Bates), Brooklyn, N. Y., U. S. A., "Refrigerator," (Re-issue of No. 4254), 21st February, 1877.
- No. 7127. J. Robertson, Montreal, Que., "Odourless Water Closet," 21st February, 1877.
- No. 7128. J. Robertson, Montreal, Que., "Hydraulic Supply Tank," 21st February, 1877.
- No. 7129. H. Squier, Grand Haven, Mich., U. S. A., "Ship Fasten g," 21st February, 1877.

Brach, I., water filters.....	6951	Lloyd, C. V., et al., steam boilers.....	7027
Brewer, C., skates.....	6961	Lucas, A. H., egg boxes.....	6972
Brokenshire, J., stump extractors.....	6971	Lyons, D. M. & L. B., car trucks.....	6931
Brooks, F. W., seal locks.....	6924	McCloskey, J., sowing machines.....	6990
" J., ash sifters.....	6955	McDovitt, B., et al., trace fastenings.....	6922
Brown, J., et al., spinning wheels.....	6956	McDonald, A., stone dressing.....	6975
" M., door spring.....	6954	" T. A., boot lacing.....	7023
Burns, G. A., et al., screw jacks.....	6926	McElhinney, M. P., blotting rulers.....	6993
Calrns, J. P. & G., door fastenings.....	7026	McGulre, J., spring beds.....	7030
Calkins, A. H., washing machines.....	7037	" W., dumb stoves.....	6947
Carter, H., clothes scourers.....	6945	McWilliams, C., et al., smoke consuming.....	6917
" P. C., envelopes.....	7008	Marshall, S. B., toys.....	6960
Clifford, W. P., grain separators.....	6932	Méhu, A., sail banks.....	7024
Clover, C. S. & H. H., et al., hydrants.....	6920	Miller, A. H., et al., railway ties.....	6906
Condon, D., et al., skylights.....	6973	Morrison, H. A., et al., umbrellas.....	7015
Connolly, N. K., derricks.....	7023	Newton, S. S., bottle stoppers.....	6986
Coopor, J. S., et al., stoves.....	6957	Parker, S., hoop shaving.....	6949
Corris, W., hubs.....	6940	Pfeifer, J., strainer and funnel.....	6948
Côté, L., peg cutting.....	6918	Phillips, F. E., hat cord.....	6987
Curzon, J., lamp burners.....	6930	Pierce, F. W., milk pans.....	6994
Davis, P. W., raising ships.....	6988	Potter, W. B., voltaic plasters.....	7034
Dresser, J. D., corn brooms.....	6941	Purdy, S. D., bale tying.....	7029
Dugdale, J. K., wringing machines.....	7017	Quimby, A., railway switches.....	6999
Dull, D., nut locks.....	7014	Randall, H. B., et al., malt syrup.....	7033
Emond, J., gate post.....	6965	Randell, H. E., et al., curtain fixtures.....	7021
Ferrari, G. B. de, et al., steam generating.....	7022	Reed, C. W., steam boilers.....	7009
Field, W. H., et al., horse rakes.....	6976	" J. L., et al., shafting bearings.....	6925
Fillman, P., sleigh knees.....	6996	Reld, J. R., et al., stoves.....	6957
Findlay, J., et al., screw jacks.....	6926	" J. W., seed drills.....	6952
Fish, A. L., milk waggons.....	7006	Renshaw, L. F., steam generators.....	7038
Foley, J., liquid filters.....	6967	Rice, C. L., vehicle braces.....	6974
Fontagne, A., et al., curtain fixtures.....	7021	Richardson, B. F., vehicle axles, &c.....	6936
Forsyth, R., et al., pulp engines.....	7015	Root, J. B., making tubes.....	6969
Foster, W. T., toys.....	6960	" " tubes.....	6983
Fraser, R. G., cement.....	6946	Rosenthal, H., brushes.....	7013
Freeman, J., et al., spinning wheels.....	6956	Schnader, D. C., et al., furnaces.....	6921
Gardner, A., et al., pulp engines.....	7015	Searle, H. W., snow shovels.....	7001
Gilbert, J., bake pans.....	7020	Seely, E. C., et al., skylights.....	6973
Golden, J. J., railway switches.....	6995	Sharp, H. A., oil cabinets.....	6962
Griswold, C. A., abdominal corsels.....	6927	Shaw, S. H., rotary harrows.....	7032
Hancock, J. T., injectors.....	7011	Shelton, G., fence posts.....	6982
Hard, J. W., et al., steam boilers.....	7027	Shipman, A. H., et al., scroll sawing.....	6929
Hartnoll, J., stone dressing.....	6975	Silva, A. P., coats.....	7016
Haskell, S. M., knife scourers.....	7036	Simpson, C. G. C., skates.....	6961
Hawkesworth, D., et al., spark arresters, &c.....	6978	Skiff, C. G., et al., pipe thimbles.....	6959
Haynes, C. E., washing machines.....	6964	Smith, J. A., organs.....	7000
Hemmiel, T. F., et al., furnaces.....	6921	Solvay, E., carbonates of soda.....	7019
Herald, J., piano fortes.....	6939	Soper, H., curling horse feet.....	6933
Hughson, F., churns.....	7039	Stephens, R. E., gates.....	7003
Inward, C., et al., pipe thimbles.....	6959	Stiles, E. G., et al., wood planing.....	6928
Ireland, F. C., skates.....	6958	Strehl, J. H., et al., hydrants.....	6920
Ives, H. A., burning coal, &c.....	6903	Tannery, A. V., et al., spark arresters, &c.....	6978
Jarves, J. J., et al., steam generating.....	7022	Tarbox, J. N., fruit jars.....	7023
Jarvis, K. M., gas furnaces.....	6951	" " " screw rings.....	6998
Jeffrey, J. A., et al., mining machines.....	7002	Teahl, J. H., shafting bearings.....	6925
Johnson, C. M., pen cases.....	6937	Teaters, W. L., et al., shafting bearings.....	6925
Kay, A., sowing machines.....	6955	Thomas, S. E., time pieces.....	6981
Kieran, J., et al., hydrants.....	6920	Valentine, A. A., et al., umbrellas.....	7018
Kunkel, J. B., eliminating phosphorous.....	6932	Walker, A., et al., preserving meats, &c.....	6942
Labrecque, H., washing machines.....	6965	Westman, W. D., first drivers.....	6944
Lake, J. K., et al., trace fastenings.....	6922	Whittenhall, D. S., et al., railway ties.....	6966
La Mothe, B. J., railway cars.....	7005	Wilber, J. G., car movers.....	6997
Lane, W. J., et al., horse rakes.....	6976	Wilcox, H. M., et al., wood planing.....	6928
Lechner, F. M., et al., mining machines.....	7002	Wilson, A., sewing machines.....	6955
Leggo, W. A., skates.....	6958	Wingard, E. V., drying kilns.....	7035
Leonard, E., slide valves.....	6953	Winsor, A. A., carriages.....	7007
Leverich, E., dust guard.....	6950	Worthelm, J., gas engines.....	6923
Livermore, R. F., baggage checks.....	6977		

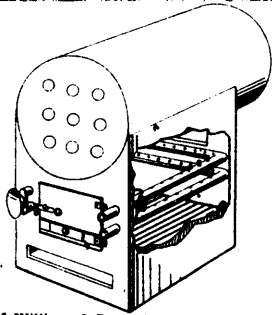
THE CANADIAN PATENT OFFICE RECORD.

ILLUSTRATIONS.

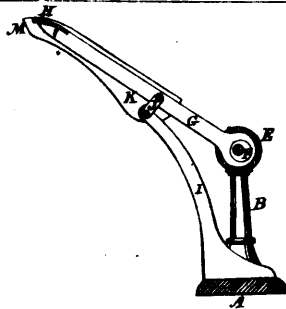
Vol. V.

FEBRUARY, 1877.

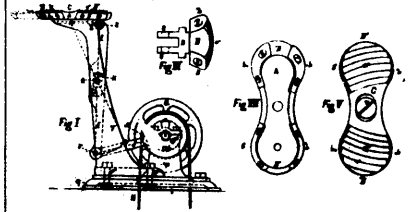
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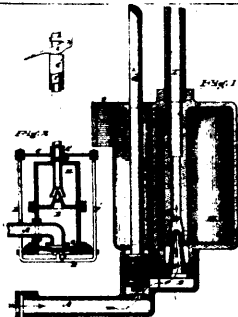
6917 McWilliams & Barney's Improvements in Smoke Consuming Devices.



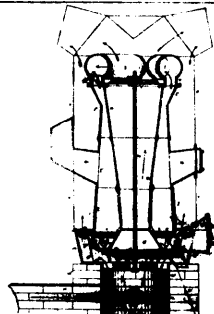
6918 Coté's Improvements on a Peg Cutting Machine.



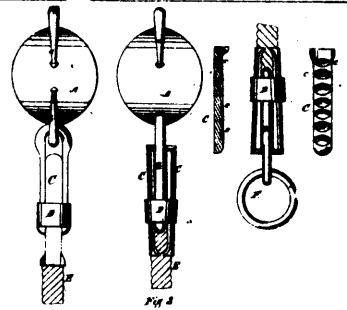
6919 Bourret's Machine for Cutting the Pegs and Nails in Boots and Shoes.



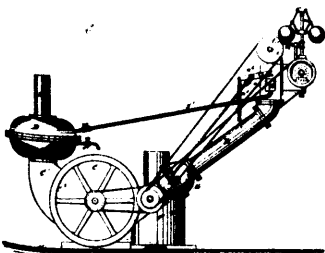
6920 Clover, Strehli & Kieren's Improvement in Hydrants.



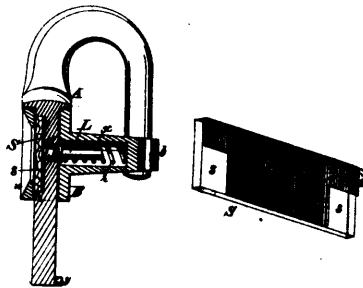
6921 Hemmich & Schnader's Improvements on Hot Air Furnaces.



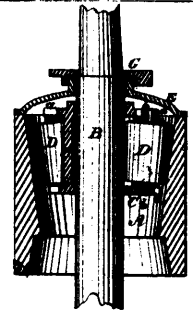
6922 Lobb & McDevitt's Improvements on Trace Fastenings.



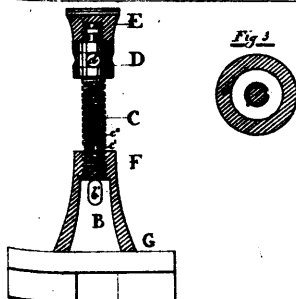
6923 Wertheim's Improvements on Atmospheric Gas Engines.



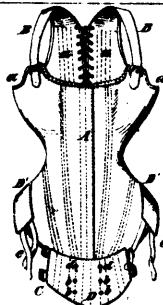
6924 Bochannan's Improvements on Seal-Locks and Seals.



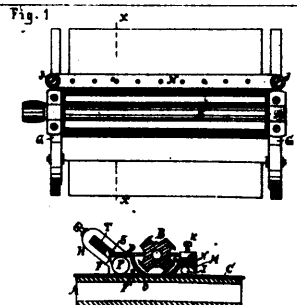
6925 Teahl's Improvements on Bearings for Upright Shafting.



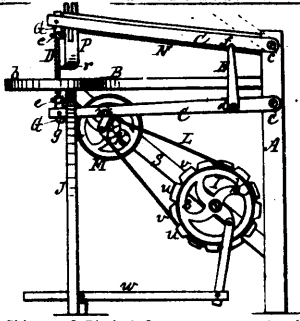
6926 Findlay & Burns' Improvements on Screw-Jacks.



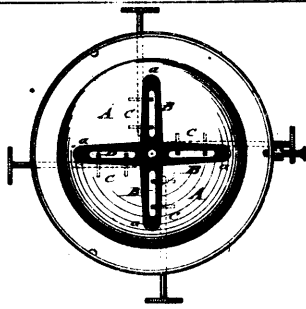
6927 Griswold's Improvements on Abdominal Corsets.



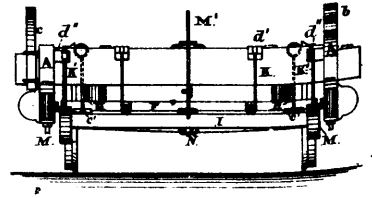
6928 Wilcox & Stiles' Improvements on Wood Planing Machines.



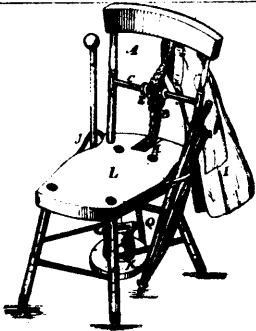
6929 Shipman & Binder's Improvements on Scroll Sawing Machines.



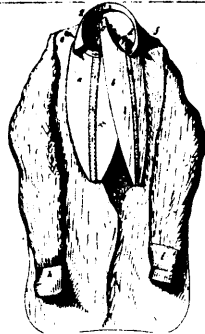
6930 Curzon's Improvements on Lamp Burners.



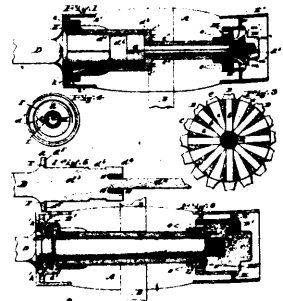
6931 Lyons' Improvements on Railway Car Trucks.



6934 De Bonald's Improvements on Chairs.



6935 Angus' Improvements on Shirts.



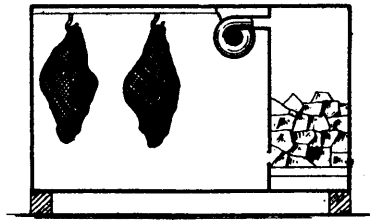
6936 Richardson's Improvements on Vehicle Axles and Wheels.



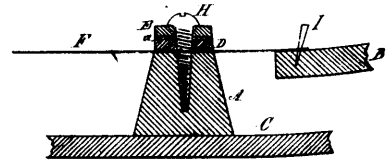
Fig. 3.—section.



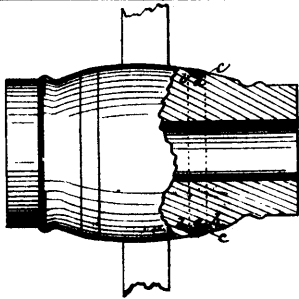
6937 Johnson's Improvements on Pen and Pencil Cases.



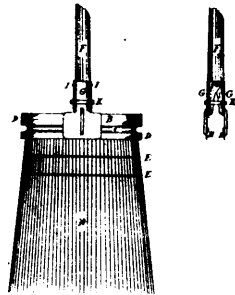
6938 Bate's System of Ventilation, Refrigeration, &c.



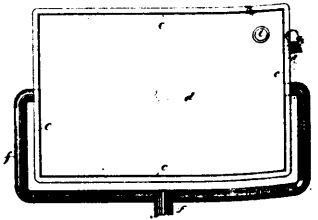
6939 Herald's Improvements in Piano-Fortes.



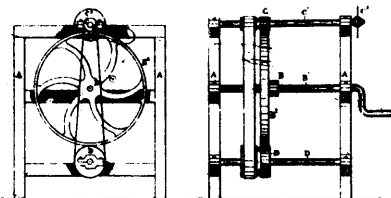
6940 Corris' Improvement on Hubs.



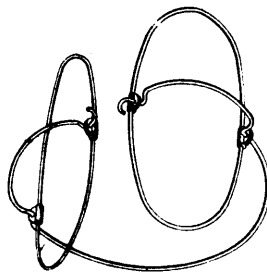
6941 Dresser's Improvements on Corn Brooms.



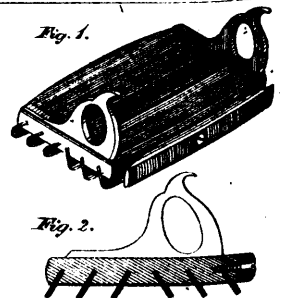
6942 Walker & Armstrong's Apparatus for Preserving Meats, Fish, &c.



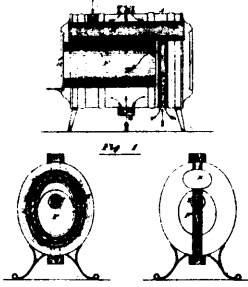
6943 Westman's Improvements in First and Intermediate Drivers.



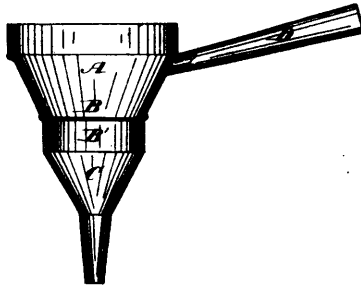
6944 Abbott's Improvements on Ear Muffs.



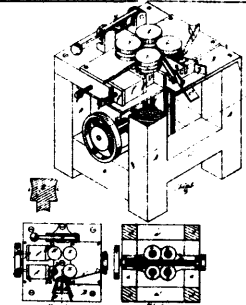
6945 Carter's Improvements on Clothes Scourers.



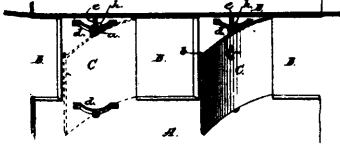
6947 McGuire's Improvements on Dumb Stoves.



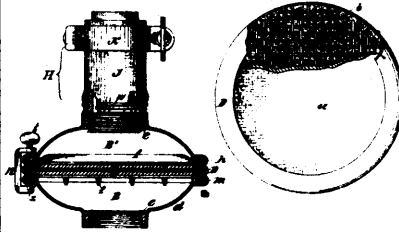
6948 Pfeifer's Combined Strainer and Funnel.



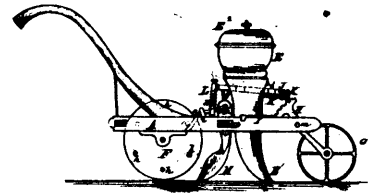
6949 Parker's Improvements on Hoop Shaving Machines.



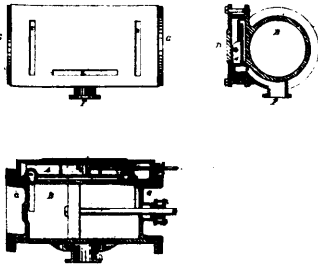
6950 Leverich's Dust Guard for Railway Carriages.



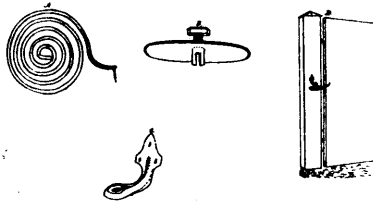
6951 Brach's Improvements on Water Filters.



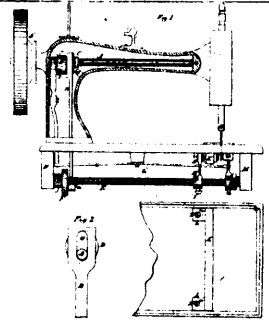
6952 Reid's Improvements in Seed Drills.



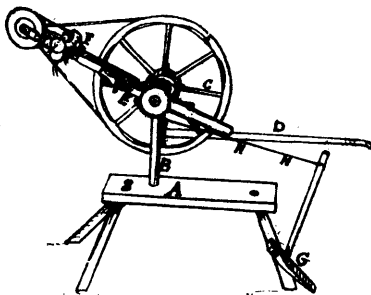
6953 Leonard's Improvements in Slide Valves.



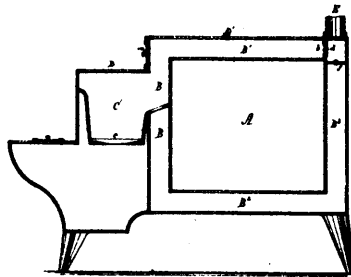
6954 Brown's Gate and Door Spring and Holder.



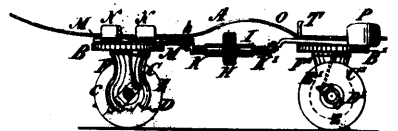
6955 Kay's Improvement in Sewing Machines.



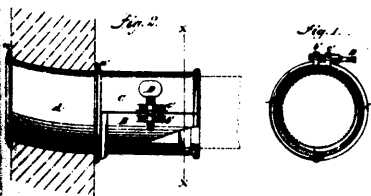
6956 Brown & Freeman's Improvements on Spinning Wheels.



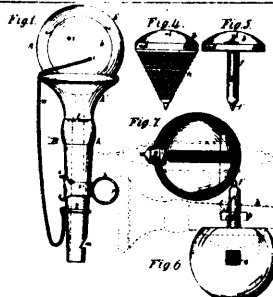
6957 Palmer's Improvements on Stoves.



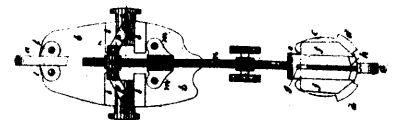
6958 Leggo's Improvements in Skates.



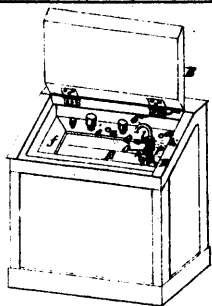
6959 Inward & Skiff's Improvements on Stove-Pipe Thimbles.



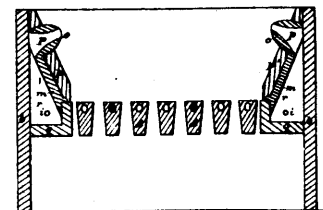
6960 Foster's Improvements in Toys.



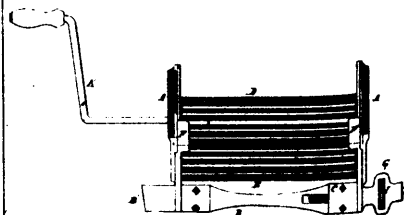
6961 Simpson's Improvements on Skates.



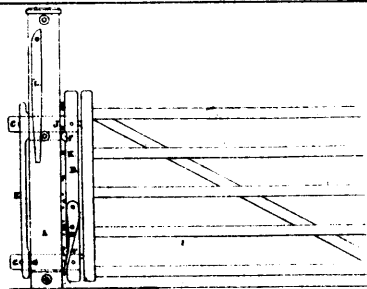
6962 Sharp's Improvements on Oil Cabinets.



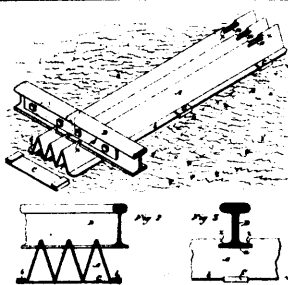
6963 Ives' Art of Burning Soft Coal and Consuming Smoke with Apparatus used therefor.



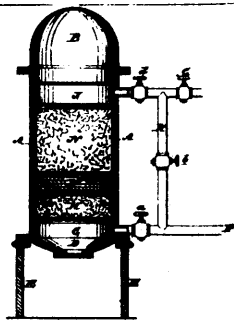
6964 Haynes' Improvements in Washing Machines.



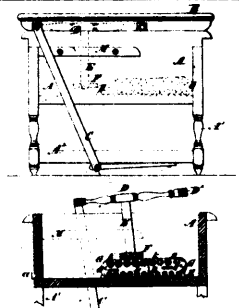
6965 Emond's Adjustable Gate Post.



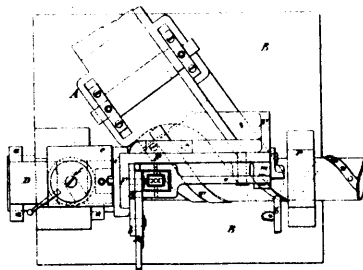
6966 Whittenhall & Miller's Improvement on Railway Cross Ties.



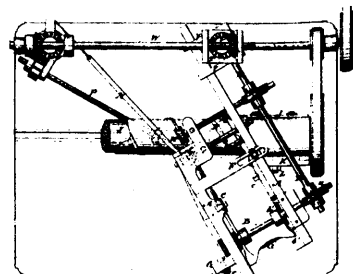
6967 Foley's Improvements on Liquid Filters.



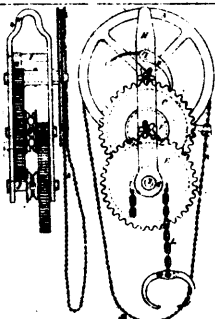
6968 Labrecque's Improvements in Washing Machines.



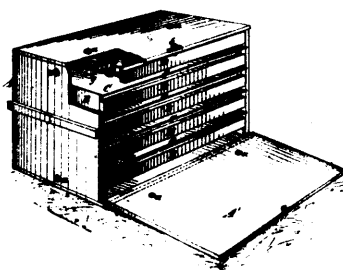
6969 Root's Machine for Making Spirally Formed Tubes.



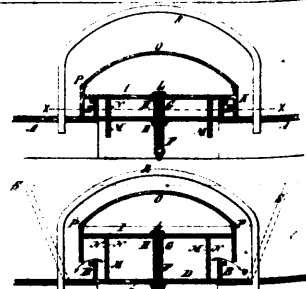
6970 Root's Machine for Making Spirally Formed Tubes.



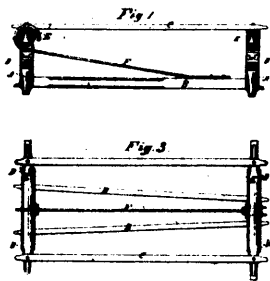
6971 Brokenshire's Improvements on Stump Extractors.



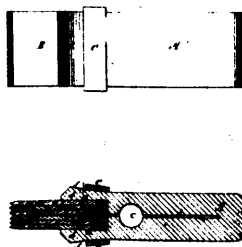
6972 Lucas' Improvement on Egg Boxes.



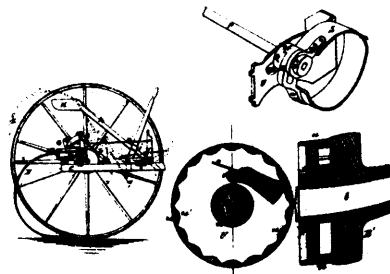
6973 Condon & Seely's Improvements on Sky Lights.



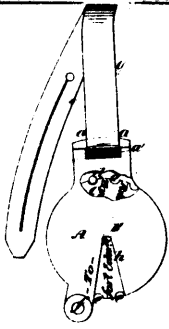
6974 Nice's Improvements on Vehicle Spring Braces.



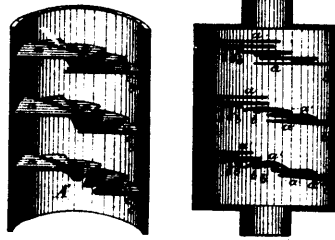
6975 Hartnoll's Improvement on Hammers for Dressing Stones.



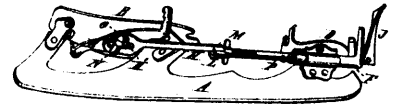
6976 Lane & Field's Improvements on Horse Hay Rakes.



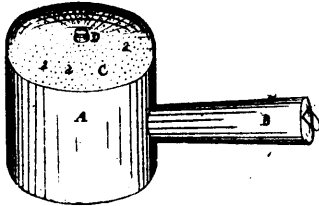
6977 Livermore's Improvements on Baggage Checks.



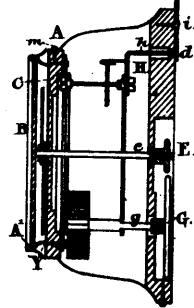
6978 Hawkesworth & Colford's Spark Arresters, Heater and Soot Gatherers.



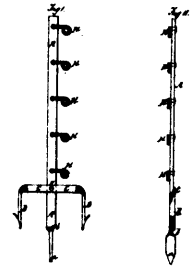
6979 Barney's Improvements on Skate Fastenings.



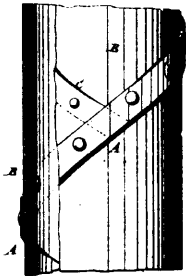
6980 Baker's Improvements on Water Sprinklers.



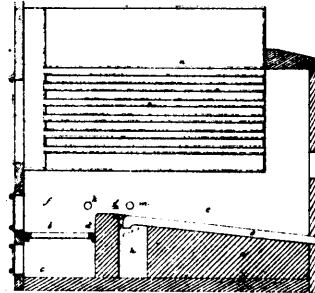
6981 Thomas' Improvements on Time-Pieces.



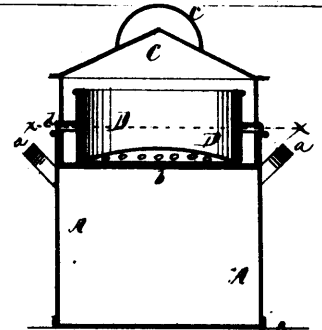
6982 Shelton's Improvements in Fence Posts.



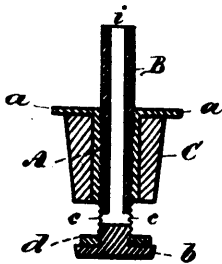
6983 Root's Improvements on Tubes.



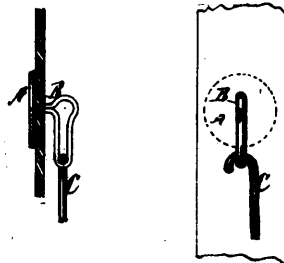
6984 Jarvis' Improvements on Gas Consuming Furnaces.



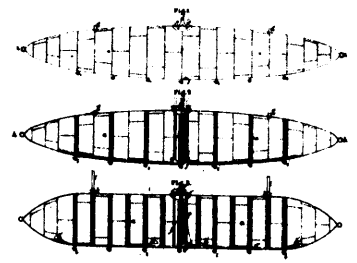
6985 Brooks' Improvements in Coal Ash Sifters.



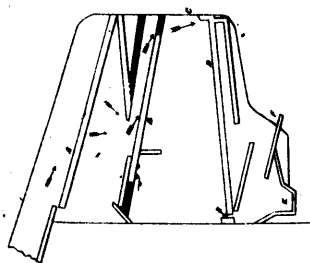
6986 Newton's Improvements on Bottle Stoppers.



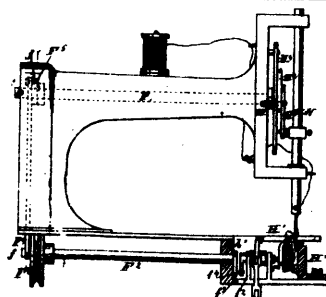
6987 Phillips' Improvements in Hat Cord Fasteners.



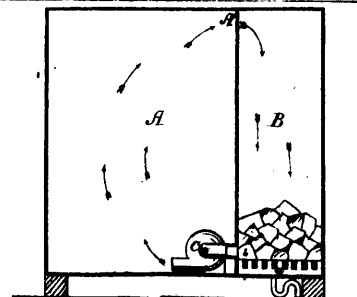
6988 Davis' Method of, and Apparatus for, Raising Sunken Ships, &c.



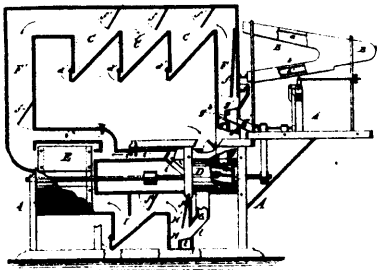
6989 Barnes' Improvements on Fanning Mills.



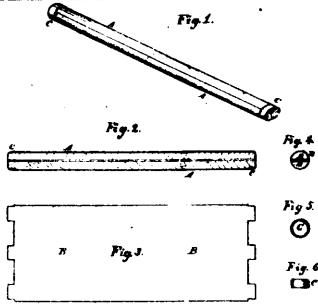
6990 McCloskey's Improvements on Sewing Machines.



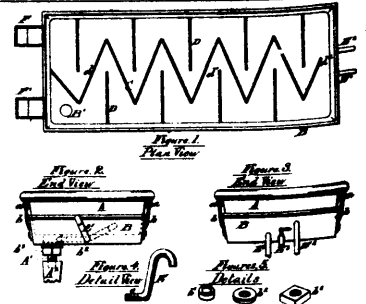
6991 Bate's Improvements on Refrigerators.



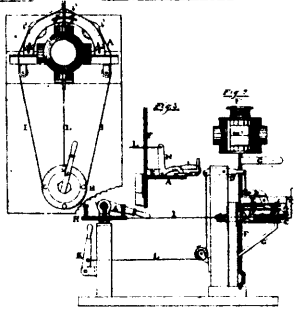
6992 Clifford's Improvements on Grain Separators and Scourers.



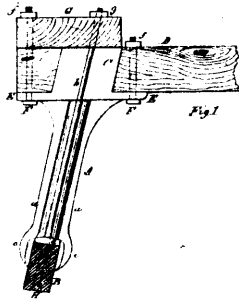
6993 McElbinney's Improvement in Blotting Rulers.



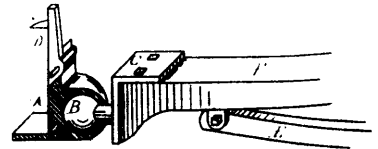
6994 Pierce's Improvements on Milk Pans and Coolers.



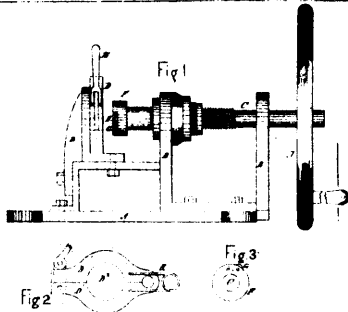
6995 Golden's Improvements in Railway Switches.



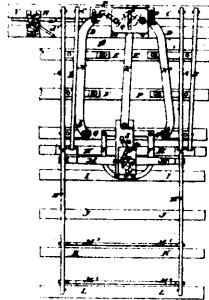
6996 Filuan's Improvements in Sleigh Knees.



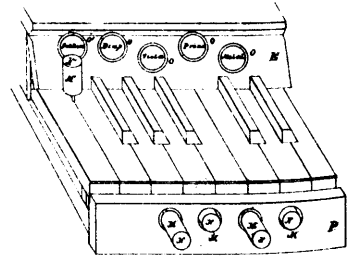
6997 Wilber's Improvements in Car Movers.



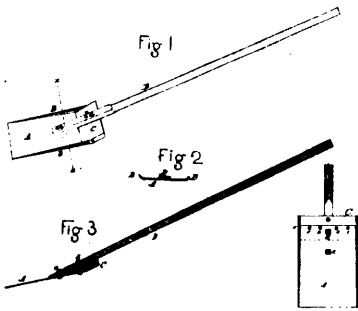
6998 Tarbox's Machine for Making Metal Screw Rings for Jars.



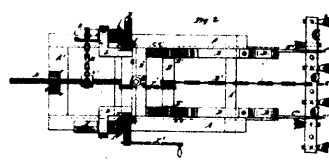
6999 Quimby's Improvements on Railway Switches.



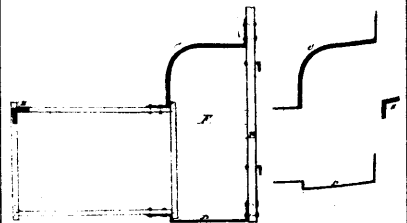
7000 Smith's Improvements on Organs.



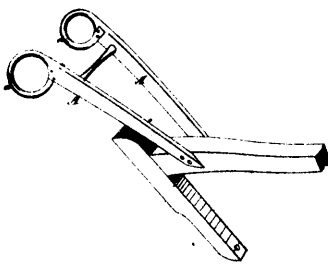
7001 Searle's Improvement in Snow Shovels.



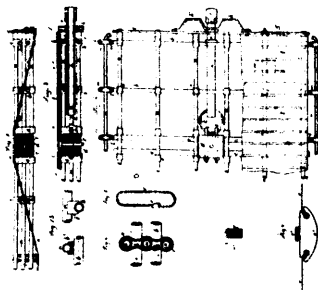
7002 Lechner & Jeffrey's Improvements on Mining Machines.



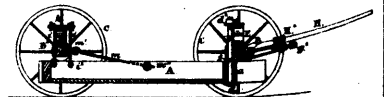
7003 Stephens' Improvements on Gates.



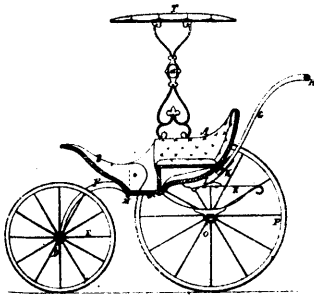
7004 Babcock's Improvements on Handles for Ploughs, &c.



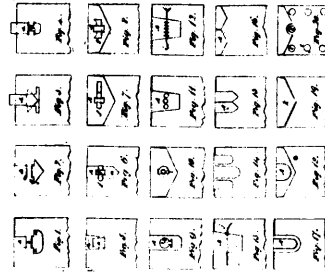
7005 LaMothe's Improvements on Railway Cars, &c.



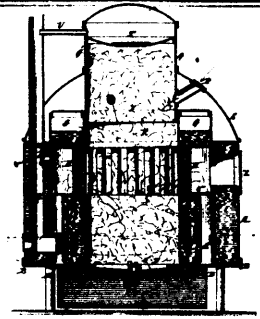
7006 Fish's Improvements on Milk Waggon.



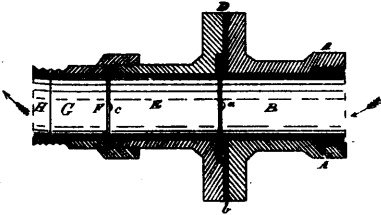
7007 Winsor's Improvements on Carriages.



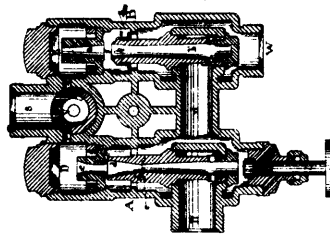
7008 Carter's Improvements on Envelopes.



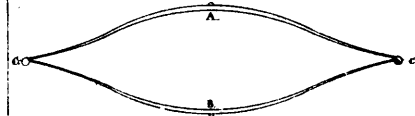
7009 Reed's Improvements on Steam Boilers.



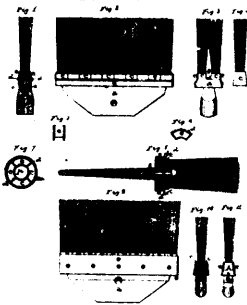
7010 Soper & McTaggart's Improvements on Gas Governors.



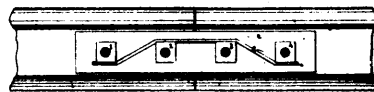
7011 Hancock's Improvement on Injectors.



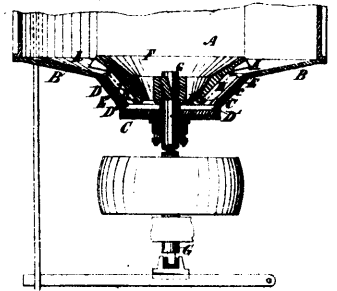
7012 Armstrong's Single Plate Carriage Spring.



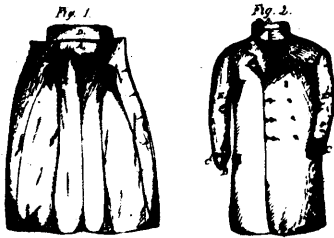
7013 Rosenthal's Improvements on Brushes.



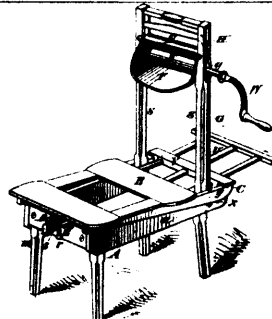
7014 Dull's Improvements in Nut Locks.



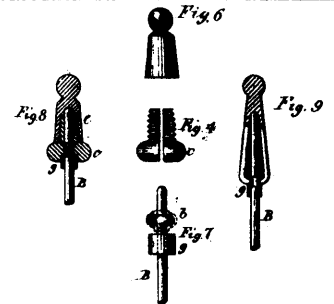
7015 Gardner & Forsyth's Improvements in Pulp Engines.



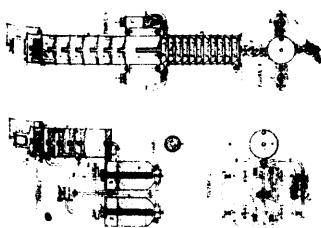
7016 Silva's Improvement on Coats.



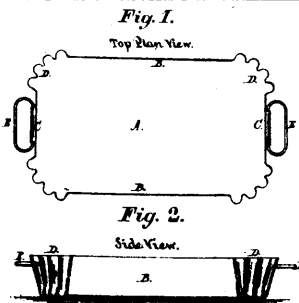
7017 Dugdale's Improvements on Wringing Machines.



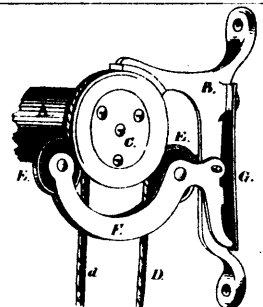
7018 Valentine & Morrison's Improvement on Umbrellas, &c.



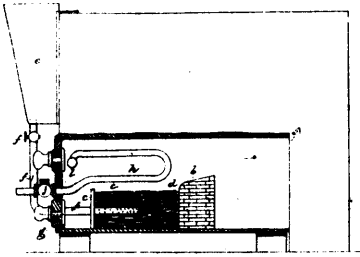
7019 Solvay's Ammoniacal Process for the Manufacture of Carbonates of Soda.



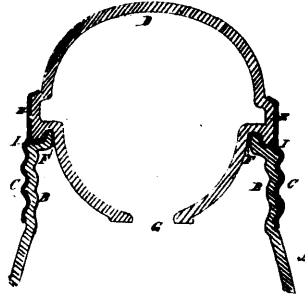
7020 Gilbert's Improvements on Bake Pans.



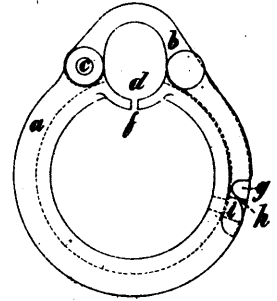
7021 Fontagne & Randell's Improvements in Curtain Fixtures.



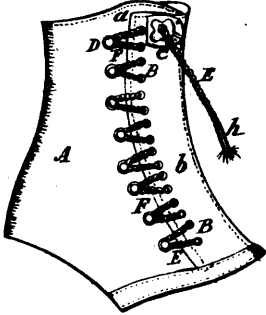
7022 De Ferrari & Jarves' Method of Utilizing Petroleum for Generating Steam, &c.



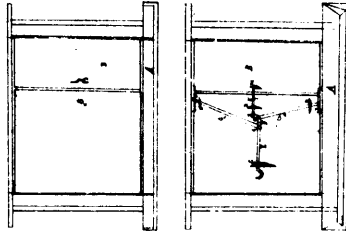
7023 Tarbox's Improvement in Glass Fruit Jars.



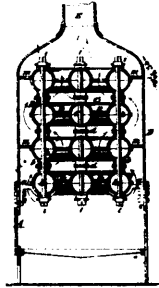
7024 Méhu's Improvements on Sail Hanks.



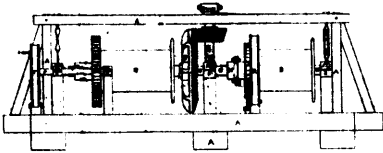
7025 McDonald's Improvements on Boot Lacings.



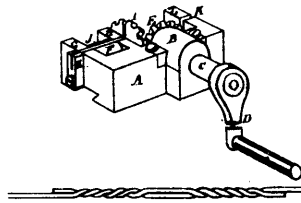
7026 Russell's Improvements in Door Fastenings.



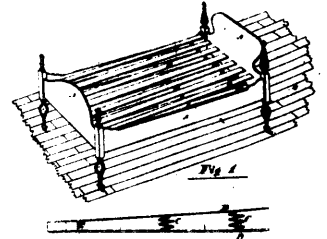
7027 Hard & Lloyd's Improvements on Steam Boilers.



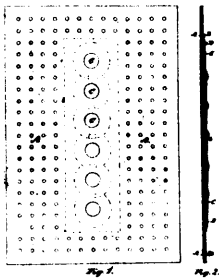
7028 Connolly's Improvements in Derricks.



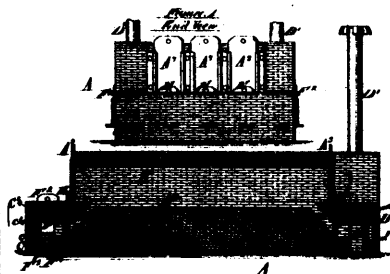
7029 Purdy's Improvements on Bale Tying Apparatus.



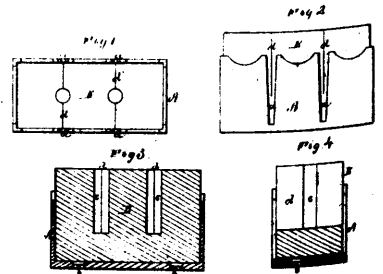
7030 McGuire's Improvements on Spring Beds.



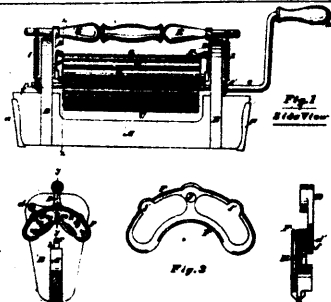
7034 Potter's Improvements on Voltaic Plasters.



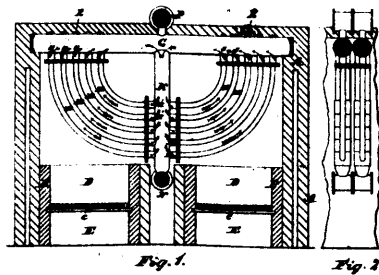
7035 Wingard's Improvements on Drying Kilns.



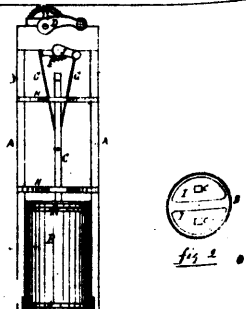
7036 Haskell's Improvement on Knife Scourers.



7037 Calkins' Improvements on Washing Machines.



7038 Renshaw's Improvements on Steam Generators.



7039 Hughson's Improvements on Churns.