

ments from which foul air is to be removed; 2nd. The combination of the reciprocating bell, or equivalent pumping apparatus, and the paired valves to exhaust and discharge of air; 3rd. A ventilating apparatus constituted and operating in manner set forth; 4th. The combination of the water tank I, the reciprocating bell or receiver H, and the flexible or jointed pipe G, for ventilating buildings or apartments.

### No. 9696. Improvements on Washing Machines. (*Perfectionnements aux machines à laver.*)

John Pike, Montreal, Que. (Assignee of Robert E. Tanner, Cayuga, N.Y., U.S.), 25th February, 1879, for 5 years.

*Claim.*—1st. The swinging frame, composed of the curved side bars F F, carrying the tilting rubbing board E, and connected by handle G and bar H, journalled in oscillating bars I pivoted to the outside of the machine; 2nd. The frame C inclinedly adjustable by eccentrically journalled blocks E; 3rd. The combination with the legs B, supporting the suds-box A, of the movable bars J, bars I, pivoted thereto, and the swinging frame journalled thereon.

### No. 9697. Improvements on Skates. (*Perfectionnements aux patins.*)

William E. Christian, George C. Greenwood and Charles H. Denison, Bay City, Mich., U.S., 25th February, 1879, for 5 years.

*Claim.*—An adjustable shoe attachment for skates, for use on snow, made to conform to the bottom of the skate-iron, and secured in position by means of lugs and set screws claspings the bottom of the skate runner.

### No. 9698. Improvements on "The MacVicar Tellurion Globe." (*Perfectionnements au globe terrestre dit "de MacVicar."*)

Malcolm MacVicar, Potsdam, N.Y., U.S., 25th February, 1879, for 5 years.

*Claim.*—1st. An adjustable horizon having a twilight circle attached thereto, pivoted to the equator and extending around the globe; 2nd. The combination of horizon, adjustably pivoted to the equator, with a meridian; 3rd. A globe revolving freely around its axis and provided with a stationary equator, in combination with a stationary axis having a pointer attached to its upper extremity and extending to the equator; 4th. A pointer attached to the upper end of the axis of the globe and extending to a point adjacent to the equator, arranged and operating so as to point to a calendar upon the equator and remain stationary when the globe is revolved upon its axis; 5th. The combination of the globe A, horizon W and meridian Z, with the stander T and rod V, the latter being adjusted to hold the horizon in a vertical position during the passage of the globe around the sun; 6th. The adjustable guides g g arranged and operating to prevent the lateral movement of the horizon, while permitting its longitudinal movement; 7th. The collar F and guides g g, in connection with the horizon, whereby the latter is held at all times facing the ball representing the sun; 8th. The combination of the arm I, index c and calendar d.

### No. 9699. Improvements in Bed Bottoms. (*Perfectionnements aux fonds des lits.*)

William B. Crich, Clinton, Ont., 20th February, 1879, for 5 years.

*Claim.*—1st. A spiral spring C, the upper coil of which is connected to the next lower coil by a bend of a circular form, and the free end of the upper coil attached to the said bend; 2nd. The combination with the slat of a spring bed bottom, said slat provided with a series of sockets which extend only partially through the slat, of a series of spiral springs constructed with hollow cylindrical or otherwise formed bearings on their lower ends c, said bearings being forced into the sockets in the slats and held therein solely by frictional contact, while the lower coil of the spring has a partial bearing on the upper surface of the slat; 3rd. The combination with the end rails of a spring bed bottom, of side rails E having the outer series of springs attached thereto, and provided on opposite ends with arms K, which are pivoted to the outer sides of the end frames, whereby said side rails are adapted to move toward, or away from, the bed, on an arc of a circle; 4th. The combination with four or more series of coiled springs, the outward series being attached to independently yielding side rails E, of end rails or frames B, each composed of two sections, centrally hinged to each other, and the ends of the side rails pivoted or hinged to said end rails, whereby the bed bottom may be folded together into small compass for shipment; 5th. The combination with the springs of a bed bottom, of end rails B, constructed with vertical outer sides and inclined inner sides, whereby the slats have a broad bearing on said end rails and the springs adjacent to said end rails attached thereto by loops, which extend over the upper edges of said end rails and are secured to the outer sides thereof.

### No. 9700. Improvements on Sewing Machines. (*Perfectionnements aux machines à coudre.*)

Samuel Rockwell, Baltimore, Md., U.S., 25th February, 1879, for 15 years.

*Claim.*—1st. The combination of the box or casing, the cloth clamp, the driver, means for clamping the attachment to a sewing machine, means for connecting the driver with a part of the machine, which moves in unison with the needle and cloth clamp actuating mechanism operated by the driver, said driver having the capacity of operating the cloth clamp only while the needle is out of the goods, so as not to interfere with the work of the needle and its co-operating stitch-forming mechanism; 2nd. The combination of the chambered turret, the single pivoted reciprocating driver, and the ratchet wheel actuated by the driver, on its upward movement only, and serving to impart motion by way of the crown wheel to cloth clamp actuating mechanism; 3rd. The combination of the box or casing, the cam frame or shifting plate, the intermittently operated cam shaft having the cams h h, snugly fitting in the slot of the cam frame, and mechanism for imparting a half revolution to the cam shaft at intervals; 4th. The combination of the single reciprocated driver, the ratchet actuated on the upward movement only by the driver, the crown wheel, the master wheel, the cam shaft, the circular cams or eccentrics on said shaft, and the cam plate or shifting frame in the slot in which the cams snugly fit; 5th. The combination of the chambered turret, the ratchet therein, the single driver, the reciprocated bar or cross-

head in a slot in which the driver is pivoted, and the spring acting upon the top of the driver; 6th. The combination of the box or casing having the chambered turret, the ratchet secured in the turret, the slotted reciprocated bar or cross-head having guide rods working in holes, in the turret, and the curved driver pivoted in the slot in said bar or cross-head, acting by its hooked end upon the ratchet, upon its upward movement only, and yieldingly held in working position; 7th. The adjustable cloth clamp improvements; 8th. The combination of the cloth holder, lower section or base plate, the cloth clamp movable section, the threaded post on the base plate, the ratchet on the movable section of the clamp, the threaded hub acting on the screw post, and the swinging stop lever secured thereto; 9th. The combination of the posts m m, on the base plate of the cloth holder, the adjustable clamp section N, its ratchet projection or disc, and the turning hub or nut acting upon the threaded end of the post m, and adapted to be locked with the ratchet; 10th. The improved button hole working attachment separate from the sewing machine and complete in itself, with the exception of the stitch-forming mechanism, and the driving power, and having the two connections to adjust to either of the two kinds of sewing machines, so as to operate without interfering with the working of the needle and its co-operating stitch-forming mechanism.

### No. 9701. Improvements on Furnace Grates. (*Perfectionnements aux grilles des fourneaux.*)

Thomas R. Butman, Milan, Ohio, U.S., 25th February, 1879, for 5 years.

*Claim.*—1st. The grate bar provided with the oblique cutting edges and the knife edge on the cross bar; 2nd. The grate bar provided with fingers adapted to interlock with the fingers of the adjacent bar, said fingers being provided with oblique cutting edges; 3rd. The combination with fingers provided with oblique cutting edges and with webs tapering downward of the knife-shaped corrugated cross-bar extending below the web; 4th. The combination of the fingered bars, their tapering pendant arms, and the connecting rod secured by pins or keys thereto, constructed to operate the fingered bars simultaneously, whereby the fuel on the grate is disintegrated; 5th. The combination of the bar, fingered and provided with the pendant arm, with the connecting rod and the side journalled bearing bar; 6th. The combination of the finger bar, the cross bar and the upper projecting conduit or tuyere, arranged to supply air to the fuel.

### No. 9702. Improvements on Furnace Doors. (*Perfectionnements aux portes des fourneaux.*)

Thomas R. Butman, Milan, Ohio, U.S., 25th February, 1879, for 5 years.

*Claim.*—1st. The combination of the door, the deflecting plate and its eccentric or cam-shaped over-balanced weights; 2nd. The combination of the door, the deflecting plate and its over-balanced weights, provided with toothed segments; 3rd. The combination of the door and deflector with their operating segments and the cam-shaped recess, the back of the door segment serving as a support for the counter-balance weight; 4th. The combination of the deflecting plate and the over-balance weight, said plate being provided with an angular socket in its journal shaft by which the plate may be set at any desired angle; 5th. The combination of the door over-balance and the weighted tripping device E, whereby the door is held in position when closed, and automatically opening when released from said tripping device; 6th. The combination of the door provided with the stiffening outwardly projecting register frame, whereby the door is prevented from warping, the tripping device and over-balanced weights, said door being also provided with holes J, for supplying the furnace with air; 7th. The combination of the door, the deflecting plate provided with its weights and segments, the tripping device, and the chamber formed between the door and the deflector; 8th. The combination of the door provided with the stiffening register frame and register, the side or edge stiffening projecting plates a with the chamber D, said door having the air perforations J, with the tripping device.

### No. 9703. Improvements on Grate Bars. (*Perfectionnements aux barreaux des grilles.*)

Albrecht E. Barthel, Detroit, Mich., U.S., 25th February, 1879, for 5 years.

*Claim.*—1st. In a grate bar having a straight smooth surface a, a parallel recessed smooth surface g, and a lower portion f corrugated vertically with hooks c at one end, and a straight bearing surface d, at the other end; 2nd. In a furnace, the bar e of inverted T-iron, for supporting the overlapping ends of the sectional grate bars; 3rd. A fire bed surface composed of small grate bars having the straight, plain and corrugated portions a g and f hooked to, and bearing on, bars C, to expand and contract lengthwise from one end; 4th. The combination, in a furnace, of grate bars provided with hooks at one end, and studs h with supporting bars C; 5th. The grate bars A A<sub>2</sub> provided with small studs h at their face and interlapping end, for the purpose of preventing such ends from fusing together while such bars are expanding longitudinally; 6th. The combination of the grate bars A A<sub>2</sub> with interlapping ends provided with studs h, and the supporting bars C arranged under such interlapping ends.

### No. 9704. Improvements on Boiler Feeders. (*Perfectionnements aux alimentateurs des chaudières.*)

Charles G. C. Simpson, Montreal, Que., 28th February, 1879, for 5 years.

*Claim.*—1st. The combination of the barrel E, chamber C and plunger B; 2nd. The combination of the guiding neck A, plunger B, chamber C and barrel E; 3rd. The combination of a guiding neck A, plunger B, chamber C and barrel E having bell mouth F; 4th. The combination of the barrel E, chamber C, plunger B, chamber G and valve H; 5th. The combination, in a feed pump, of the chamber C, provided with hot water, with the plunger B and barrel E; 6th. The combination of chamber C, provided with hot water, and having pipe R attached to it or its extension K, plunger B and barrel E; 7th. The combination of the chamber C, provided with hot water, and having pipe R attached to it or its extension K, guiding neck A, plunger B and barrel E; 8th. As a new article of manufacture, a steam boiler feed pump having its barrel opening directly to the feed chamber (by which said barrel is filled), and its plunger stroke made to work partly in the feed chamber and partly in said barrel; 9th. As a new article of manufacture, a feed pump having its barrel opening directly to the feed chamber by which said barrel is filled, and having in connection with said feed chamber a