cranks, on either the driving shaft or the bogie axle, have their crank pins passing through balls fitted to turn within blocks sliding radially in a toothed wheel, in gear with a wheel on the bogie axle or the shaft, so that the shaft or axle of the first named wheel can assume any angular position thereto. 2nd. In an apparatus for driving bogie axles the combination of the shaft b, crank arms $b3$, pins $b4$, wheel c, blocks c^2 and balls $c3$.

No. 12,432. Improvements on Portable Shower Bath Apparatus. (*Perfectionnements aux appareils à douches portatifs.*)

James E. Vansant, Cincinnati, Ohio, U.S., 28th February, 1881; for 5 years.

Claim.—1st. The combination, with the vessel A and sprinkler D, of the tube E. 2nd. The combination of the indicating float F provided with wires f^1 having heads f^2 formed on their outer ends, with the vessel A. 3rd. The combination of the tubes G and the ballasting weight g^1, with the pivoted vessel A. 4th. The combination of the bail J and cords L M, with the pivoted vessel A and the main bail H. 5th. The combination, with the bails H J, of the hinged catch K.

No. 12,433. Improvements on Hub Attaching Devices. (*Perfectionnements aux appareils à ajuster les moyeux.*)

Zadock Huggins, Allegan, Mich., U.S., 28th February, 1881; for 5 years.

Claim.—1st. The box A, axle B and circumferential flange, or collar e connected therto, in combinat on with the band C having part ition a and the disc x x having a packing chamber between the two and the screw d.

No. 12,434. Improvements on Pumps. (*Perfectionnements aux pompes*).

Pierre E. Jay, New York, N. Y., U. S., 1st March, 1881; for 5 years.

Claim—1st. The combination of the off-set a, having the sloping bottom c, the ring f having its inner side inclined or sloping in a direction opposite to the inclination of the bottom c, the packing D interposed between the aforesaid ring f and the sloping bottom c, the bolts g for actuating the ring f, the plunger c having a diameter somewhat less than the bore of the pump cylinder in which it is placed. 2nd. The ring E constructed with the screw threads n r_1, in combination with the screw thread a^1 of the part A of the cylinder, the screw thr ad b_1 of the part B of the said cylinder, the sloping or inclined bottom c of the off-set a, the packing D, the ring f and movable bolt g. 3rd. The pump cylinder composed of the part A having the off-set a, and the part B having the flange b, whereby, when the parts are joined, an annular chamber is formed for the reception of a stationary packing. 4th. A pump body or barrel constructed with one or more screw sections capable of longtitudinal adjustment to afford access to the interior of the said barrel. 5th. In a pump barrel, the combination of the internally screw threaded end parts A^1 and B^1, the externally screw threaded sections E^1 F^1, and internally screw threaded central portion C^1 carrying a suitable packing, and a plunger D^1. 6th. The internally threaded central portion C^1, constructed with the internal circumferential rib c^1, the two packing rings e^1 f^1, the externally threaded sections E^1 F^1, the internally threaded end parts A^1 B^1 and the piston D^1. 7th. The combination of the jam nuts F^{11} F^{111} E^{11} E^{111} with the internally threaded end parts A^1 B^1, the externally threaded sections E^1 F^1 and the internally threaded central portion c^1 of the pump barrel. 8th. The combinat on of the laterally adjustable block H_3 carrying the pivot of the arms K_3, the arms K_3 provided at their outer extremities with weights L_3, the wheel c_3, having guides for holding the arms K_3 in position, and the crank A_3 having the wheel c_3 attached to its shaft B_3. 9th. The combination of the laterally adjustable block H_3, plate h_3, bolt i_3, nut m_3 guides F_3, pivoted arms K_3 having weights L_3, wheel c_3 having guides for retaining the arms K_3 in position, and crank A_3, the whole arranged for joint use and operation. 10. The combination of the block H_3 having the rack c_3 on its under side, and pinion F_3 having a crank or hand wheel, in combination with the arms K_3 having weights L_3, the wheel C_3 having guides for holding the arms K_3 in position, and the crank A_3. 11th. The rollers o_3, each composed of the two parts a^2 having the flanges c_1, the guides F_3 and pivots or screws b_3, in combination with the slotted arms K_3 having weights L_3, the wheel c_3 and the crank B_3. 12th. The weights L_3 constructed with sharpened ends, in combination with the arms K_3 and the wheel C_3 on the shaft of the crank A_3. 13th. A spoke or spokes c_4, having a rectangular cross-section, in combination with a weight or weights L_3, bearing B_5, bearing g^4, and arm or arms K_3. 14th. A weight or weights L_3, composed of lateral sections r, secured together by screws or bolts n, in combination with a radial spoke or spokes c_4, bearing B_5, bearing g^4, and radial arm or arms K_3.

No. 12,435. Improvement on Toe Weights for Horses. (*Perfectionnement aux pesées pour les sabots des chevaux*).

David Roberge and David Roberge, jr., New York, N. Y., U. S., 1st March, 1881: for 5 years.

Claim.—1st. A foot weight for horses, composed of two separate sections c c^1, each section being provided with one or more conveying or radial fingers d d^1 d^2, and adapted to be secured to the other section by means of a screw bolt f, after being applied to the foot.

No. 12,436. Improvements on Corsets. (*Perfectionnements aux corsets*).

Solomon Vermilyea and Hannah M. Vermilyea, Belleville, Ont., 1st March, 1881; for 5 years.

Claim.—The eyelets piercing the steel ribs at the back F, also the eyelets piercing the steel at each end of the side ribs H.

No. 12,437. Improvements in Gas Burning Furnaces. (*Perfectionnements aux fourneaux à gaz*).

Joseph J. Gill, Steubenville, Ohio, U. S., 1st March, 1881; for 5 years.

Claim.—1st. In combination with a gas producer, a double arch covering the same and forming an intervening unbroken air chamber, with inlet ports d for the supply of air, and exit ports d^1, leading thence to the combustion chamber, 2nd. An open chamber D^2, surrounding the vertical walls c c^1 of the combustion chamber, and with ports d^2 leading through such walls to the combustion chamber. 3rd. In combination with one or more chambers B of a gas burning furnace, an arch D covering each such chamber, such arch being of substantially equal thickness throughout, in combination with an undivided air chamber, D^2, extending over the whole or the greater part of the upper surface of the arch or arches; and passages for supplying air to such air chamber, and for conducting it thence to the combustion chamber of the furnace. 4th. In a gas producing and burning furnace, a pier P, arched at its end as at a, for an arch support, and squarely built inside such end as at a^1, for a support for the walls of the combustion chamber. 5th. The combination of the pier P, supplemental arches c^2, walls c c^1 and arch or cover D with eye g^1.

No. 12,438. Hinged Frame Spring Bed Bottom. (*Sommier élastique à charnières*).

William Critch, Toronto, Ont., 1st March, 1881; (Extension of Patent No. 5,741).

No. 12,439. Improvements on Paper Veneer. (*Perfectionnements au placage en papier*)

Isaiah M. Clark, Coldwater, Mich., U. S., 1st March, 1881; for 15 years.

Claim.—1st. The process of preparing or treating paper to form a painted veneer, the same consisting in applying a coat of dry white lead or zinc and varnish mixed, and then graining or painting in imitation of wood. 2nd. The process of applying the paper veneer to wooden surfaces, the same consisting in saturating the plain or unoiled side of the veneer with water, then immediately coating it with glue or cement and laying it, while still wet, on the wooden surface, and stretching it as much as practicable at the same time. 3rd. The paper veneer having a foundation coat of mixed dry white lead or zinc and varnish, and an oil painted ornamental coat or finish.

No. 12,440. Improvements in Thrashing Machines. (*Perfectionnements aux machines à battre*).

Thomas Doherty, Watford, Ont., 1st March 1881; for 5 years.

Claim.—1st. The combination of the double crank shaft B, rack E, provided with brackets E E, and shaft B^2, levers G G., table F^1, arms H H and hangers J J.

No. 12,441. Improvements on Milk Pans. (*Perfectionnements aux boites à lait*)

John G. Cherry, Cedar Rapids, Iowa, U. S., 1st March, 1881; for 5 years.

Claim.—1st. The milk vessel A provided with the central tube B, graduated glass windows E, feet i and outlet f having screw cap g, in combination with the conical cover D, having overlapping sides d, and central tube c^1. 2nd. In a pan for setting milk to raise cream, the conical cover D adapted to be arranged upon the milk pan A, in such a manner as to allow the condensed animal heat or vapour to escape, and at the same time exclude the outer atmosphere and water from the contents thereof. 3rd. The pan A, provided with the graduated windows E arranged so as to measure the contents of the pan while contained therein.

No. 12,442. Improvements on Snow Ploughs. (*Perfectionnements aux charrues à neige*).

John L. Sturdy, Goderich, Ont., 1st March, 1881; for 5years.

Claim.—1st. An inclined plane A, provided with side wings B and leading from the rails to a flat platform C, in combination with a concaved plough head D placed upon the flat platform, for the purpose of throwing, to the rear of the moving plough, the snow accumulated on the platform.

No. 12,443. Improvements on Vessel Propellers. (*Perfectionnements aux propulseurs des vaisseaux*).

Richard Smith, Sherbrooke, Que., 1st March, 1881; for 5 years.

Claim.—1st. In reciprocating propellors for navigable vessels, two steam cylinders, pistons and rods, in combination with two propeller blades hinged together at their inner edges, one piston rod being connected with the hinge of the blades, and the other with the outer edges of such blades. 2nd. In reciprocating propellers for navigable vessels in which two steam cylinders (one for driving ahead and the other for backing), pistons and rods are employed with the two propeller blades hinged together at their inner edges, one piston rod being connected with said hinge and the other with the outer edges of the blades, the construction of the two piston rods, whereby a short slip movement is permitted between them sufficient to open or close the propeller blade, while at other times the two rods with the propeller move together. 3rd. The piston rod of one cylinder, as tubular upon its outer end and enclosing the outer end of the rod of the other cylinder. 4th. The piston rod of one cylinder as tubuler upon its outer end, to enclose the outer end of the rod of the other cylinder, when a longitudinal slip is permitted between them of sufficient extent to open or close the blades of the propeller. 5th. The construction and arrangement of the two piston rods, the hinged blades and their connections, whereby upon opening the blades when the direct cylinder is used, the outer edges of such blades, with the backing piston rod, remain practically stationary, while their inner edges move with the primary piston rod outward to open the blades. 6th. The construction and arrangement of the two piston rods, the hinged blades and their connections, whereby, upon closing the blades when the direct cylinder is used, the hinges of such blades, with the primary piston rod, remain practically stationary, while the outer edges of the blades by and with the backing piston rod move inward upon such hinge and fold together. 7th. The piston rod of the primary cylinder, as extending to the propeller in a straight line, in combination with the piston rod of the backing cylinder which takes a bend, at its outer end and enters the tubular outer end of the primary piston rod, or the tubular shaft of the propeller secured to the outer end of the said primary piston, a longitudinal slip permitted between the two rods of sufficient ex-