No. 1974. WILLIAM A. IVES, New Haven, Ct., U. S., 14th January, 1873, for 5 years: "A Bit Brace." (Un vilebrequin.)

In which a pair of jaws is combined with suitable mechanism to grasp the tang of the bit.

Claim.—1st. A bit-brace socket consisting of the stationary head A and its slotted or grooved-barrel B, constructed to receive the follower D, and the jaws E, F, so that by a longitudinal movement of the said follower, in the said slot or groove of the stationary barrel the jaws E, F, are opened or closed according to the movement of the barrel; 2nd. Combination with the subject matter of the first clause of claim in the sleeve T, arranged around the barrel of the socket so as to revolve freely thereon but without longitudinal movement so as to operate the said follower; 3rd. A bit-brace, the two jaws E1, F1, formed upon or attached to the end of the bit-brace, constructed upon their inner surface, to grasp the tang, and externally at the grasping end, inclined and combined with a sleeve H, working upon the threaded head of the jaws to move over the external surface of the jaws at their grasping-end, so that traversing longitudinally it will close the jaws or reversing allow the jaws to open; 4th. A bit-brace, a pair of jaws E1, F1 constructed upon their inner surface to grasp the tang of the bit and upon their outer surface, inclined, or of diminishing diameter in the line of expansion and transversely of nearly equal diameter, combined with the sleeve H1, working on the said outer surface.

No. 1975. MELVIN JINKS, Wallace, N. Y., U. S., 14th January, 1873, for 15 years: "A Saw." (Une scie.)

Claim.—1st. A saw constructed with teeth A, having points *a*, swaged, forged or filed, gauge-heels *b*, throat *d*, when arranged as described, for rip-saws; 2nd. Combination with said teeth A, having points *a*, gauge heels *b*, and throat *d*, the bevel-saw teeth B, for the purpose of making a combined rib and cross cut-saw.

No. 1976. HUGH FAIRGRIEVE, Hamilton, Ont., 14th January, 1873, for 5 years: "Compound Engine Cylindrical Balance Valve." (Valve cylindrique d'équilibre pour les machines à vapeur combinées.)

Consists in the removal of all unnecessary pressure from the working surfaces of the valve which is accomplished by the balancing principle obtained in its construction, also in an economy of steam and its non exposure to condensing influences

Claim.—In constructing the valve A, as shown in fig. 1, for the admission and release of the steam to and from the cylinders W and X; 2nd. The tapering or conical form given to the valve and casing for the purpose of securing efficiency and durability of the working surfaces; 3rd. The pipe *p, p*, connecting the ports *b, b*, with a tap or stop-valve in the same for the purpose of relieving any undue cushioning in the high pressure cylinder W, and also to admit live steam from the boiler directly to the large cylinder *x*, while working the engines by hand, and 4th. In the valve A, with or without the application of a cut-off valve, on the orifice *g*, in head c, or otherwise in connection with the same.

No. 1977. LOFTUS PERKINS, London, Eng., 14th January, 1873, for 5 years: "Marine and Stationary Engine." (Machine à vapeur marine et fixe.)

Claim.—1st. The construction of marine and stationary engines as described; 2nd. The construction of marine and stationary engines with the joints of the several parts of the boiler engine and condensor packed with a metallic packing so as to exclude all access of salt or impure water to the interior of the machine and to work with pure fresh water and so maintain the inner metal surfaces always in a clean state and free from corrosion.

No. 1978 GEORGE S. WALKER & FRANK F. ADAMS, Erie, Pa., U S., 14th January, 1873, for 10 years: "A Clothes Washing Machine." (Machine à laver le linge.)

The combination of a large rotary corrugated or rubbing-roller with a series of small rollers of a particular construction so arranged that when the clothes are pressed between them the operation of cleansing is performed.

Claim.—1st. The series of rollers H1, H1, H1, etc., in combination with a large roller B; 2nd. The large propelling roller B, small rollers H1, H1, H1, etc., uprights D, D, and base-board H, in combination with the castings M and N; 3rd. The castings M and N; 4th. The roller B, and H1, H1, H1, etc., in combination with the strip O; 5th. The face plate F, in combination with the upright D, and sliding journal box J; 6th. The button-prop G, in combination with the large roller B, shaft I, and spring K.

No. 1979. SAMUEL DEVEAU & SIMEON E. PERKISS, Hamilton, Ont., 14th January, 1873, for 5 years: "A Washing Machine." (Machine à laver.)

Claim.—1st. A revolving cylinder A, without a vent, constructed with lifters E, on the inside as shown operated by handle D, in combination with the supporting frame B, or the equivalent; 2nd The opening H, in combination with the cylinder A; 3rd. The arrangement of the door K, with a layer of rubber between the plates, and secured by the revolving clamp *e*, and nut and pin *f*, as specified.

No. 1980. KING M. C. ARNOLDI, Ottawa, Ont., 14th January, 1873, for 5 years: "Frost Proof Tubing" (Tube en métal à l'épreuve de la gelée.)

Claim.—The hollowing or corrugating of pipes or vessels A, A, with one or more hollows or corrugations.

No. 1981. WILLIAM C. BAKER, New York, U. S., 14th January, 1873, for 5 years: "Steam Apparatus for Heating Buildings." (Appareil à vapeur pour chauffer les bâtiments.)

Claim.—1st. The circulating coil passing through the fuel space of the furnace and made so that the fuel will come in contact with the same and settle down between and all around the pipes of the coil as consumed; 2nd. The arrangement of the coil *h*, circulating vessels *d* and *e*, and feed-water and circulating pipes *n, r, o, s*, in combination with the boilers or cylinders *a*; 3rd. A radiating-chamber made of sheet metal and provided with a corrugated plate of metal within such chamber to keep the sheet metal sides at the proper distance apart; 4th. The septums *h2*, and *h3*, introduced between the sheet metal sides *a1*, of the radiating chambers and clamped by means of bolts, 5th The end plates *a2*, provided with connections for the steam and water-pipes, in combination with the steam radiating chambers, septums and clamping bolts.

No. 1982. OLIVER W. KETCHUM, Toronto, Ont., 14th January, 1873, for 5 years: "A Smoke and Gas Consuming Furnace and Steam Generator." (Un fourneau fumoire et générateur de vapeur.)

Claim.—1st. A boiler furnace provided with a vertical self-feeding fuel cylinder E, made air-tight connecting with fire-box B, and passing through boiler A; 2nd The vertical self-feeding cylinder E, made flaring toward the bottom; 3rd. A vertical self-feeding fuel cylinder, a furnace and a boiler combined with pipes connecting with an air-pump, by which a continuous current of air is forced under pressure through the fire; 4th The doors *b, b*, hinged and opening inwards to allow the same to be held closed by air-pressure from within; 5th The fire-box B, having door *b*, combined with a flame chamber having door *b*, or a cylinder E, having door E, to allow of natural draft in starting fire; 6th. The construction and arrangement of the pipes C, C; 7th The deflectors *a1, a1*, arranged over the pipes C1; 8th The steam-dome *a*, provided with a series of superposed deflectors J, J.

No. 1983 OLIVER W. KETCHUM, Toronto, Ont., 14th January, 1873, for 5 years: "A Liquid Fuel Furnace and Steam Generator." (Un fourneau à combustible liquide et régénérateur de vapeur.)

Consists in the method of burning liquid fuel such as coal oil or petroleum under a pressure of air from one pipe that supplies the supporter of combustion and under pressure of air from another pipe upon the hydro-carbon which is used as the combustible.

Claim.—The air-tight hydro carbon chamber C, connected with air-pump by a pipe C1, and with the flame-chamber C2, by a pipe D, having jet-pipes F, F1, F2.

No. 1984. OLIVER W. KETCHUM, Toronto, Ont. 14th January, 1873, for 5 years: "A Heating Furnace." (Un calorifère.)

Claim.—1st. The flame-chamber constructed and arranged in connection with boiler and furnace; 2nd. The combination with a single furnace connected with an air-forcing apparatus of a boiler, having pipe E, and a hot-air chamber having pipe E1; 3rd. A latch J, provided with tapering prongs *j, j*. 4th An air-pump and an air-tight furnace combined, with the pipe E1, having a weighted valve, to enable combustion to take place under any pressure des[illegible] and the hot gases therefrom to be kept under pressure unt[illegible] their caloric is completely or approximately utilized by means of pipes distributed through buildings.

No. 1985 JAMES WEBSTER, Birmingham, Eng., 14th January, 1873, for 15 years: "Process for Manufacturing Iron and Steel." (Procédé de fabrication du fer et de l'acier.)

Relates to a process of carbonizing or steeling wrought iron by passing through it whilst in a heated state carburetted hydrogen or common coal gas in combination with nitrogen or atmospheric air, or a combination of carbonic-oxide, or carbonic-acid gases mixed with nitrogen or vapour of carbon.

Claim.—Carbonizing or steeling wrought iron and recovering the gases resulting therefrom. In the improved nozzle shewn in figs. 7 and 8, for admitting, regulating and mixing the gases into the retorts.

No. 1986. JAMES BURNS, London, Ont., 16th January, 1873, for 5 years: "A Tar-Burner." (Appareil à brûler le goudron comme combustible.)

Claim.—1st. The combination of the two tubes A and B; 2nd. The combination of the nozzle M, on end of burner.