

ing the head of the blank, and also operates as an ejector; 2nd. A blank holder for screw threading and pointing machines, embodying, in combination, a pair of gripping jaws, a recessed seat for the head of a blank and an ejector.

No. 10,037. Improvements on Reaper Knife Grinders. (*Perfectionnements aux rémouleurs des couteaux de moissonneuses.*)

John Burns, Ottawa, Ont., 7th June, 1879, for 5 years.

Claim—The combination of the bolt C, knife holder F, plate I and diagonal pressure screw H clamping the knife J.

No. 10,038. Washing Machine. (*Machine à laver.*)

Majorique Rousseau, St. Michel, Que., 7th June, 1879, for 5 years.

Résumé—La combinaison de la boîte cylindrique C avec les traverses G tournant sur l'essieu N, aussi la combinaison de la cuve A avec la boîte B et son couvercle J, demi circulaire figuré pour empêcher l'eau de se répandre.

No. 10,039. Improvements on Lightning Conductors. (*Perfectionnements aux paratonnerres.*)

Henry W. Spang, Reading, Penn., U. S., 7th June, 1879, for 5 years.

Claim—1st. The combination of metallic conductors, arranged in downward and direct lines beneath the wooden sheathing, or rafters, or slate covering of the roof of a building, or of a steeple or other elevated object, with the air terminal or elevated metallic conductors thereon, and the rain pipes or vertical conductors leading from the eaves of the roof to the earth; 2nd. The combination of sheet metal bands or conductors F G H, arranged with the chimney-cap A, the rods B C, the gutter or trough D, and the rain-pipe E; 3rd. In the combination of the air-terminal rod B, with the rafter or cross-piece L and bar N.

No. 10,040. Improvements on Motor Engines. (*Perfectionnements aux machines motrices.*)

Eusebius J. Molera and John C. Cebrian, San Francisco, Cal., U. S., 7th June, 1879, for 5 years.

Claim—1st. In a motor engine, actuated by gas or vapour in a state of tension, the combination with concentric piston chambers H H₁, and a double acting hydraulic device C operated by a liquid piston, of valve mechanism governing the supply and exhaust of the motive fluid together with a float device D, movable with said piston, and adapted to operate said valve mechanism; 2nd. In a motor engine, actuated by gas or vapour, in a state of tension, the combination with concentric liquid piston chambers H H₁ and a plunger C, working within the inner one thereof, and connected with the driving parts of a valve-stem C, which extends down within said inner chamber, and is adapted to operate the valve motion, in supplying and exhausting the motive fluid, said valve stem being alternately raised and lowered by engagement of stops, formed at suitable points thereon, with the plunger; 3rd. In a motor engine in which an hydraulic device connected with the driving parts is actuated by the expansion force of certain gases or vapours, the combination with the liquid piston chambers H H₁, having suitable inter-communication of a valve chest B, located above the same and valve stem C, which latter, by engagement with the hydraulic device, operates the valve motion within said valve chest; 4th. In a motor engine, in which an hydraulic device connected with the driving parts is actuated by the expansive force of certain gases or vapours, the combination with the liquid piston of an independent liquid interposed between the latter and the hydraulic device, said piston having no chemical action relative either to said liquid or motive fluid; 5th. In a motor, the combination with a liquid piston, of a float, diaphragm disk or equivalent device c, movable therewith and adapted to actuate the valves which govern the inlet and outlet of the motive fluid; 6th. In a motor provided with liquid pistons (one or more), the combination with the piston chambers of a valve chest B, and valve arranged therein or thereon, so that the valve stems shall project through the chest only into the piston chambers; 7th. In a motor engine operating with elastic pistons, the combination with a piston chamber H₁, provided with supply and exhaust valves, and a plunger C, which latter connects by plunger rod E, with the driving mechanism of a second piston chamber H₁, having constant communication with the first chamber, and also with the pipe which supplies both said chamber with a suitable motive fluid in a state of tension; said plunger rod E being of such transverse sectional area relative to the chamber in which it works, that the effective strokes of the plunger respectively following the alternate supply and exhaust of the motive fluid, may be alike equal or variable as desired; 8th. The combination of the two chambers H H₁, valve chest B, valve E, liquid piston K X, float D, wheel case F, valves *l b u w*, and the revolving wheel; 9th. The method of operating machinery, consisting in applying the motive fluid alternately, to one of a pair of solid elastic pistons K K₁ through the medium of valves, which are operated by said pistons, and then transmitting the power from the pistons through the medium of a liquid, the flow of which is controlled by the movement of the pistons in the manner explained; 10th. In a motor, the combination with a centrally disposed valve chest N, the opposite surfaces of which serve as surfaces for confining the motive fluid in one direction, said valve chest provided with valves, the stems of which are constructed and adapted to project from the opposite surfaces of the valve chest, of solid elastic pistons K K₁, attached to the centrally disposed valve chest, and movable toward and from the same; 11th. In a motor, the combination of a centrally disposed valve-chest N, solid elastic pistons K K₁, attached thereto, valves for governing the inlet and outlet of motive fluid operated by the pistons, and a transmitting liquid interposed between the pistons and the device to be driven; 12th. In a motor, the combination of a valve-chest N, having valves which are moved by the solid elastic pistons K K₁, and chambers surrounding said pistons, and provided with inlet and outlet ports for the transmitting liquid, which ports are governed by valves adapted to be operated by the pistons; 13th. In a motor, the combination with the solid elastic K K₁, of liquid chambers located exteriorly thereto, and adapted to receive and discharge the transmitting liquid; 14th. The combination, with the solid elastic pistons K K₁, adapted to receive and transmit motion, of a valve chest located so that the valve stems shall project only into the chambers formed within said pistons; 15th. In a motor, the combination with centrally disposed valve chest N, the opposite surfaces of which serve to confine the motive fluid in one direction, of an unyielding outer covering and intermediate elastic pistons K K₁.

No. 10,041. System of Pumping and Cooling.

(*Mode de pomper et rafraîchir.*)

Eusebius J. Molera and John C. Cebrian, San Francisco, Cal., U. S., 7th June, 1879, for 5 years.

Claim—1st. A process of pumping consisting in expanding a suitable gas or vapour, passing it out under due regulation into a pumping chamber exhausting the same, and finally condensing it preparatory to being subjected to a similar repeated process; 2nd. A process of cooling and ventilation, for mines and subterranean shafts, consisting in expanding a suitable gas or vapour to a due degree of tension within said shaft or mine, and then passing the same out therefrom under confinement through a draft opening or conduit; 3rd. A combined process of pumping and cooling consisting in raising a suitable gas or vapour to a due degree of tension, introducing the same into a pumping chamber, exhausting the gas and passing said exhaust gas under confinement through a draft opening, previous to condensing it; 4th. A process of pumping consisting in subjecting a liquid piston within a pumping chamber, to the pressure of an expansional gas or vapour, which latter is introduced into said pumping chamber under due regulation; 5th. In a system of pumping by means of the expansional power of certain gases or vapours, the combination with a gas vessel or boiler H₃, intermediate connection and suitable valve mechanism of a pumping chamber D₃, which is adapted to be operated by a liquid piston; 6th. In an apparatus, for pumping by means of the expansional power of certain gases or vapours, the combination with a suitable vessel or boiler H₃, in which the latter are heated, of one or more pumping chambers D₃ together with intermediate connections and valve mechanism; 7th. In apparatus for pumping by means of the expansional power of certain gases or vapours, the combination with a suitable gas vessel or boiler H₃, and one or more pumping chambers D₃ connected therewith under valve controlling communication of a condenser K₃, and exhaust pipe connection leading from said chamber or chambers thereto; 8th. In an apparatus for pumping by means of the expansional power of certain gases or vapours, the combination with a gas vessel or boiler H₃, one or more pumping chambers D₃, a condenser K₃, and a suitable intermediate connection of mechanism adapted to liquify the gas; 9th. In an apparatus for pumping by means of the expansional power of certain gases or vapours, the combination with a gas vessel or boiler H₃, one or more pumping chambers D₃, a condenser and intermediate connections of a force pump L₃, and a receiver Q₃, adapted to liquify the gas and store the same in said liquid condition; 10th. In an apparatus for pumping by means of the expansional power of certain gases or vapours, the combination with a suitable gas vessel or boiler H₃, located within a mine or subterranean shaft, of a condenser K₃ located above the same, and pipe connection controlled by valve mechanism between the same, said pipe connection being placed within a draft opening or conduit H₃; 11th. In an apparatus for pumping by means of the expansional power of certain gases or vapours, the combination with a gas boiler H₃, one or more pumping chambers D₃, a condenser K₃ and intermediate connections of a receiver Q₃, and pipe connection N₃ between the same and the gas boiler, said pipe being provided with suitable valve mechanism; 12th. In an apparatus for pumping by means of the expansional power of certain gases or vapours, the combination with a gas boiler H₃ located within a mine or subterranean shaft, of a receiver Q₃, in which the gas after being once used is stored in the form of a liquid or a solution preparatory to being again used, together with a pipe N₃ connecting said boiler and receiver, and which is provided with a valve adapted to be moved by valve rod and float mechanism operating within said boiler; 13th. In an apparatus for pumping by means of the expansional power of certain gases or vapours, the combination with a gas boiler H₃, located within a mine or subterranean shaft, and a condenser K₃ located above the same, of pipe connection between the two, and suitable safety valve mechanism, said pipe *a* communicating with the top or upper body of the boiler; 14th. In an apparatus for pumping by means of the expansional power of certain gases or vapours, the combination with a gas boiler H₃, located within a mine or subterranean shaft, and a condenser or absorber K₃ located above the same, of a pipe connection and suitable valve mechanism between the two, said pipe K communicating with the bottom or lower body of the boiler; 15th. In an apparatus for pumping by means of the expansional power of certain gases or vapours, the combination with a gas boiler H₃, one or more pumping chambers D₃ and intermediate connections of suitable valve-chests C₃ and valve mechanism, the latter being adapted to feed and exhaust gas in alternate succession respectively into and from said chamber or chambers; 16th. In an apparatus for pumping by means of the expansional power of certain gases, the combination with a gas boiler H₃, a pumping chamber D₃, and intermediate connection of gas inlet and gas exhaust valves C₅ C₆, said valves being adapted to be closed and opened in alternate succession; 17th. In an apparatus for pumping by means of the expansional power of certain gases, the combination with gas boiler H₃, intermediate connection, and a pumping chamber D₃ formed with gas inlet and exhaust ports governed by suitable valve mechanism, of respective water feed, and discharge pipes T₃; 18th. In an apparatus for pumping by means of the expansional power of certain gases, the combination with a gas boiler H₃, intermediate connection, and a pumping chamber D₃ of respective gas inlet and gas exhaust valves C₅ C₆, a valve rod to which the stems of said valves are secured, and a float adapted to close or open the latter; 19th. In an apparatus for pumping by means of the expansional power of certain gases, the combination with a pumping chamber D₃ provided with suitable water feed and water discharge mechanism, of gas inlet and exhaust valves C₅ C₆, whose stems are secured to a common valve rod, said rod being formed with stops *d* *d*² located at suitable points therein, with which the float is adapted to engage and thereby respectively close and open said valves; 20th. In an apparatus for pumping by means of the expansional power of certain gases, the combination with one or more pumping chambers D₃ and gas exhaust pipes, of a draft pipe or pipes G₃ connecting the same with suitable condensing mechanism, said draft pipe or pipes being located within a draft opening H₃ leading from the surface ground down within a mine or subterranean shaft.

No. 10,042. Improvements in Motor Engines.

(*Perfectionnements aux machines motrices.*)

Eusebius J. Molera and John C. Cebrian, San Francisco, Cal., U. S., 7th June, 1879, for 5 years.

Claim—1st. The combination with a boiler E₂, having a vapour ejection port, one or more at the upper end thereof, of a horizontally moving screw H₂ attached to the driving shaft B₂ of the motor, and located within the