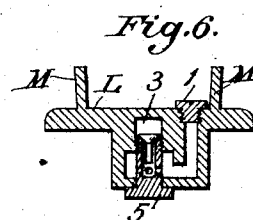
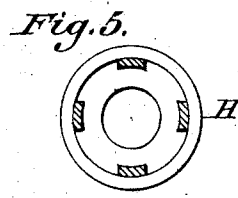
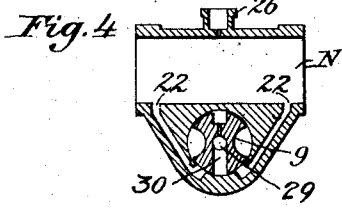
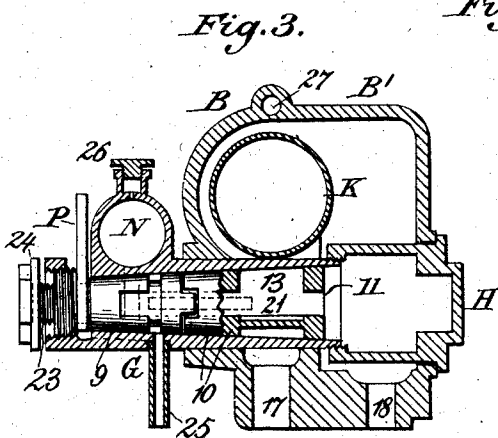
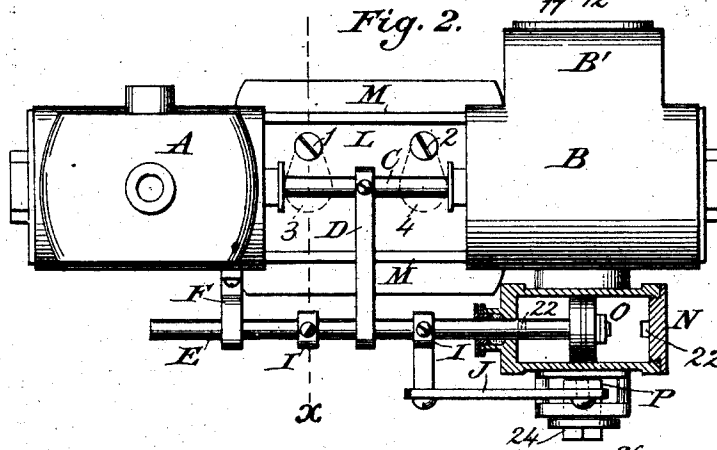
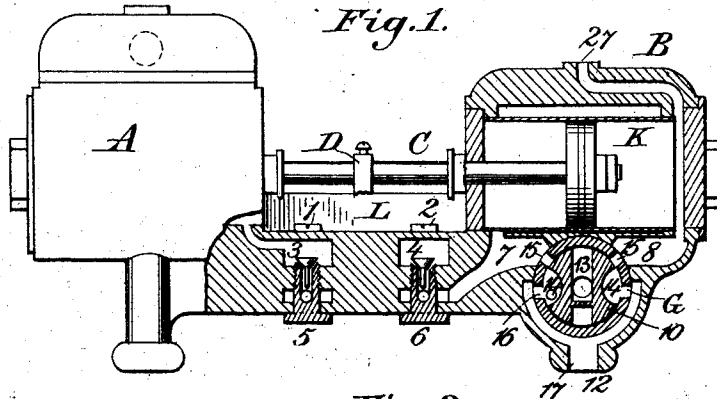


B. PICKERING.
WATER MOTOR PUMP.
APPLICATION FILED MAR. 8, 1905.

928,215.

Patented July 13, 1909.



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UNITED STATES PATENT OFFICE.

BARTON PICKERING, OF DAYTON, OHIO, ASSIGNOR TO EDWIN G. PICKERING, OF DAYTON, OHIO.

WATER-MOTOR PUMP.

No. 928,215.

Specification of Letters Patent.

Patented July 13, 1909.

Application filed March 8, 1905. Serial No. 249,112.

To all whom it may concern:

Be it known that I, BARTON PICKERING, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Water-Motor Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in water motor pumps of the character shown in Letters Patent granted to me, No. 616,138 in which are disclosed main and auxiliary cylinders and main and auxiliary valves the valves fitting a conical casing and having loose interlocking connection with each other; and my invention has for its object to provide certain improvements over said patent the features of which will be fully hereinafter described and claimed.

The several objects in view will be pointed out and explained as to the construction and operation in the following description.

The accompanying drawing illustrates the construction of the pump, in which—

Figure 1 is a side elevation of the motor pump with the greater part in central longitudinal section. Fig. 2 is a plan of the same with the supplementary cylinder in horizontal section, other parts entire. Fig. 3 is a central transverse section of the motor. Fig. 4 is a central transverse section of the supplementary cylinder. Fig. 5 is a transverse section of the closing nut or cap. Fig. 6 is a transverse section of the frame on line *x* Fig. 2.

Like letters and numerals designate like parts in the several views.

The motor pump is constructed in the matter of the arrangement of the cylinders, the piston rod with pistons on both ends, glands, &c. much as usual. The basin *L* forms the union between the cylinders, and in line with the horizontal surface of the basin and external thereto are the flanges *M M*, which form the support to the pump,

by attaching wall brackets to the same. Beneath the basin is a part extending from the valve case of the motor to the suction conduit of the pump part, and in this part are the conduits for the motor and the pump. These conduits terminate in the rear of the basin and are closed respectively by the screws 1 and 2. The dotted lines in the basin, Fig. 2, indicate the outlines of the rear orifices, which are identical. In the motor frame are the issue ports 7 and 8, and the discharge orifice 17. Issue port 7 is extended downward to a round horizontal opening, thence vertically, and backward and is closed by the screw 2. The under orifice is closed by the screw 6, which is provided with valve 4 in its end, closing the central orifice, with which the orifices in its side communicate. The head of the screw 6 closes the outer orifice and engages the part above, and thereby closing the conduit. When the screw 2 is withdrawn the water will flow from the port, up through the valve in said screw and enter the basin; then if the screw 1 is removed, the water would be drawn by the pump piston into the pump cylinder *A* thereby charging the same. The valve 3 of screw 5 is identical with the former, and prevents any return of the water to the basin. Oil is carried into the pump cylinder by the same operation, the oil being poured into the orifice in the basin.

The motor cylinder *B* is provided with a circular orifice in its under side provided with ports 7 and 8, inflow orifice 18, shown in Fig. 3 and the discharge orifice 17. The central orifice of this frame is made slightly tapering to the rear, and into this is inserted the valve-seat *G*. An integral part of this valve seat is the supplemental cylinder *N*. This cylinder is provided with the piston *O*, and the rod *E* which extends outwardly through the stuffing gland in the head of the inner end. The left end of this rod is guided in the arm *F* attached to the side of the pump cylinder. The arm *D* is attached to the main piston rod *C* and embraces this rod, and when in operation engages the tappets *II*; the latter being provided with an arm to which is connected the rod *J*, the other end being connected to the valve arm *P*.

A is the pump cylinder shown in Figs. 1 and 2.

The motor cylinder B has the rear extension B', the same extending beyond the cylindrical space and downward to the rear of the principal valve, and, the use being that of an air chamber for said motor, the air occupying the space within the walls external to the brass lining K see Fig. 3. The rear part of the valve seat is provided with two issue orifices 15 15—see Fig. 1—registering with the two ports of the cylinder; and two discharge orifices 16 on opposite sides. The forward part is provided with the two ports 22—see Fig. 4—and the front end is provided with the adjusting screw 23 and the cap nut 24. The screw receives the pressure on the valve as the same is pressed outwardly by the action of the water on the rear end; and is used to prevent the valve being bound too tightly in its seat. When the valve-seat is placed within its tapering case, the cap H Figs. 3 and 5 engages a screw thread on the outer surface of the end, and when said cap is brought to a bearing against the external surface of the cylinder, said seat is securely held and the orifice is thereby closed. This cap is open in its sides to let the water pass freely to the valve, which it enters through the central orifice 11, in end of said valve. The two coneshaped valves interlock—as shown in Fig. 3. The supplementary valve 9 has a tongue entering the groove of the principal valve thus securing the movement of the valve of the supplementary piston before the flow is cut off through the principal valve, and thus this valve is fully reversed, and the opposite movement occurs.

The water enters the principal valve through the central orifice 21, and which central orifice 21 extends to issue port 30 thence through the oblong orifice 13, from which the water discharges alternately into the ends of the cylinder, and in its return enters the side recesses 14, and is discharged through ports heretofore described. The central issue orifice registers with ports 22 of the supplementary valve, through which the water enters the cylinder N. The supplementary valve is moved through the mechanism heretofore described. The initial movement is given by the arm D on the main piston rod, and the completed movement of the interlocking valves is effected by the auxiliary piston within the valve-seat. The slight play in the interlocking arrangement insures a continuous movement of the motor, as before the principal valve shuts off the supply, movement is given to the auxiliary piston which completes the movement of the principal valve; thus in effect producing a movement allied to a duplex pump.

At 12 Figs. 1 and 2, is shown a portion of the valve cut away, corresponding in size to

the port 13. This serves to balance the pressure on the top and bottom of the valve, by admitting the water to this space through a small orifice in the partition. The two valves are similar in construction; and at 25, Fig. 3, is shown a separate outlet for the discharge of the water from the outer valve, the water first entering the side recesses, thence into the annular groove and into the discharge pipe. The orifice 26 in the cylinder of the valve-seat is for oiling the same; and the orifice 27 in the motor cylinder is for the same purpose.

Having described my invention, what I claim is:—

1. In a motor pump, the combination with the motor and pump cylinders, of a basin connecting the cylinders, a valve casting below and integral with the basin, the valve casting being provided with passages leading from the basin to the respective cylinders, screws closing the openings in the basin, and check valves located in the passages leading to the cylinder to prevent flow from the pump cylinders and to the motor cylinder.

2. In a motor pump, the combination with a pump cylinder, of a basin attached thereto, a valve casting below and integral with the basin, the valve casting being provided with a passage leading from the basin to the cylinder, a screw closing the opening in the basin, and a check valve located in the passage to prevent flow from the cylinder.

3. In a motor pump, the combination with the pump cylinder, of a basin attached thereto, a valve casting below and integral with the basin, the valve casting being provided with a passage leading from the basin to the cylinder, and an opening in the lower surface leading into the passage, a screw closing the opening in the basin, a member threaded into the lower opening and closing the passage, the member being provided with a channel therethrough, and a check valve for closing the channel to prevent flow from the cylinder, whereby the pump may be primed or oil admitted thereto.

4. In a motor pump, the combination with the pump cylinder, of a basin attached thereto, a pump cylinder in controllable communication with the basin, a valve casting below and integral with the basin, the valve casting being provided with a passage leading from the basin to the cylinder, a screw closing the opening in the basin, and a check valve located in the passage to prevent flow to the cylinder.

5. In a motor pump, the combination with the motor cylinder, of a basin attached thereto, a pump cylinder in controllable communication with the basin, a valve casting below and integral with the basin, the valve casting being provided with a passage leading from the basin to the cylinder, and an opening in the lower surface leading into the pas-

sage, a screw closing the opening in the basin,
a member threaded into the lower opening
and closing the passage, the member being
provided with a channel therethrough, and
5 a check valve for closing the channel to pre-
vent flow to the cylinder.

In testimony, that I claim the foregoing as

my own I affix my signature, in presence of
two witnesses.

BARTON PICKERING.

Witnesses:

JACOB H. SCHWINN,
WM. KEHM.