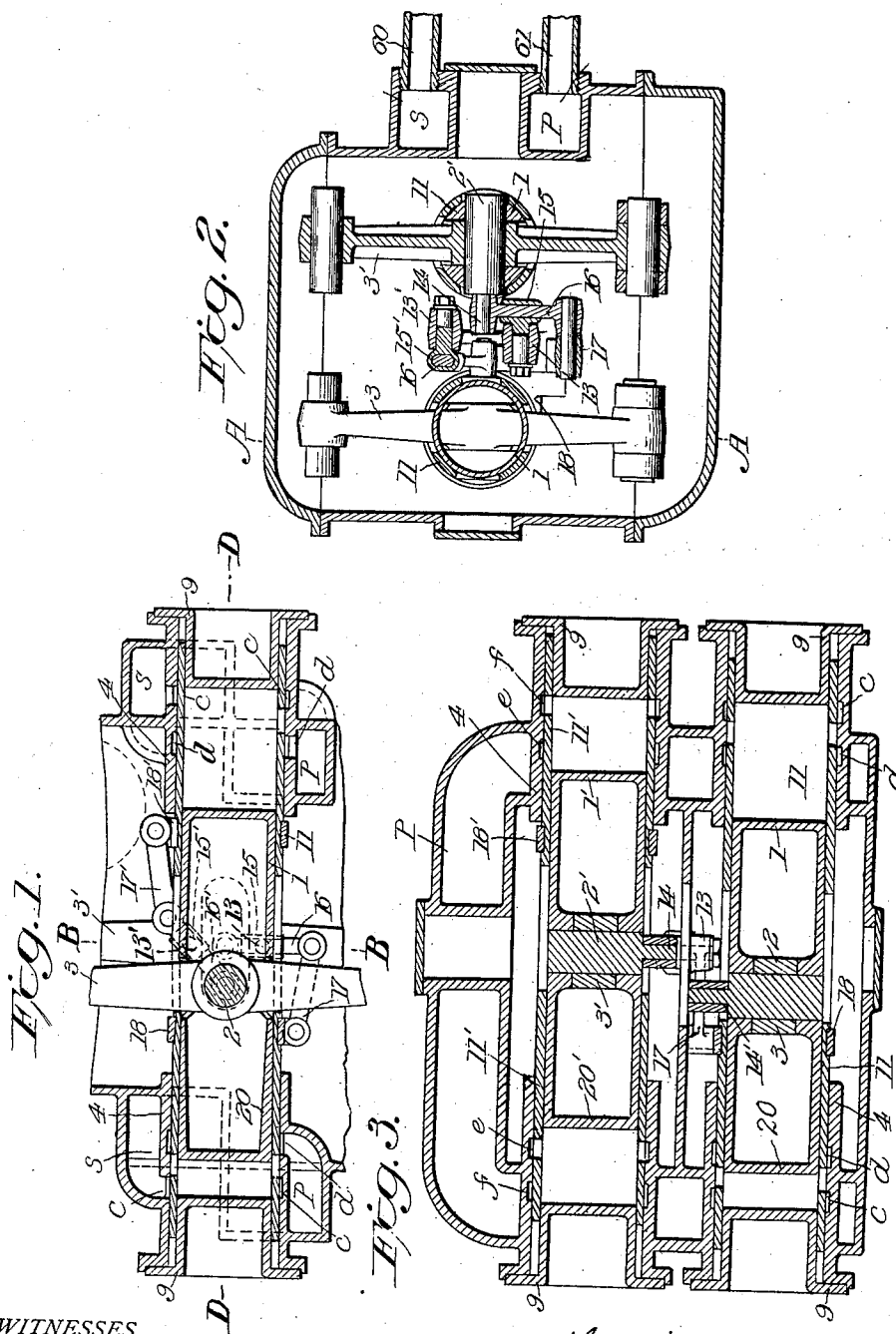


H. DOCK.
PUMP VALVE ACTUATING MECHANISM,
APPLICATION FILED MAY 14, 1912.

1,050,817.

Patented Jan. 21, 1913.



WITNESSES
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UNITED STATES PATENT OFFICE.

HERMAN DOCK, OF WESTERLY, RHODE ISLAND.

PUMP-VALVE-ACTUATING MECHANISM.

1,050,817.

Specification of Letters Patent.

Patented Jan. 21, 1913.

Application filed May 14, 1912. Serial No. 697,215.

To all whom it may concern:

Be it known that I, HERMAN DOCK, a citizen of the United States, residing at Westerly, in the county of Washington and State of Rhode Island, have invented certain new and useful Improvements in Pump-Valve-Actuating Mechanism, of which the following is a specification.

My invention relates to a novel valve-actuating mechanism for pumps; and is particularly designed for use in connection with double pumps operated from reciprocating driving elements.

The invention is described in the accompanying specification, and in the drawings, in which—

Figure 1 is a section on plane A—A of Fig. 2; Fig. 2 is a section on plane B—B of Fig. 1; and Fig. 3 is a section on plane D—D of Fig. 1.

The pump is shown as having four cylinders, though a single pair of cylinders may be used. As shown in Fig. 1, these cylinders may be formed as part of a casing 4. Within these cylinders are reciprocated sleeve valves 11, 11', and within these valves are reciprocated the pistons 1, 1', and 20, 20', the pistons 1 and 20 being connected to a piston-pin 2'. These piston-pins are reciprocated in any desired manner; in this instance, they are shown as connected to beams 3, 3', which are in turn operated by suitable mechanism. Rigidly attached to the casing 4 are two bosses 13, 13', and rocking in these bosses are two hollow fulcrums 15, 15', through which slide the rods 16, 16', pivoted at their ends on studs 14, 14', on the piston-pins 2, 2'. To the outer ends of these rods 16, 16', are pivoted the links 17, 17', which are in turn pivotally connected to the straps 18, 18', secured to the valves. In this valve gear each piston-pin works the valve gear of the other set, the gear crossing over.

As shown in Fig. 1, the piston 1 is just beginning its stroke to the right and the piston 1' is at half stroke but also moving to the right. The valve 11 is, therefore, moving to the left. The right-hand pistons are delivering and the left-hand pistons sucking. S, S, are the suction passages communicating with the cylinders through ports c, c'; and P, P, are the pressure passages communicating with the cylinders through ports d, d'. The right-hand port c' is closing and the left-hand suction port d

is opening. The ports for the other pair of cylinders 1', 20', are shown in Fig. 3, e, e, being the suction ports and f, f, the pressure ports, the port openings in the valve 11' being, of course, arranged to properly register with the corresponding cylinder ports at the proper times. 60 is the inlet pipe to the pump and 61 is the outlet.

By a proper arrangement of the valves, the four-pump system shown will deliver a practically steady stream as the pumps may be arranged to discharge in sequence.

While I have described in detail the various elements of the device, I do not wish to be limited to the precise constructions, as equivalent constructions will suggest themselves to those skilled in the art.

I claim:—

1. A pump comprising a cylinder, a piston and means for operating it, a valve, and means for operating said valve comprising a reciprocating element, a lever pivoted thereto, a hollow fulcrum through which said lever slides, and a link connecting the lever to the valve.

2. A pump comprising a cylinder, a piston and means for operating it, a valve, and means for operating said valve comprising a reciprocating element, a lever pivoted thereto, a sleeve, through which said lever is adapted to slide, pivoted to the frame, and a link connecting the lever to the valve.

3. A pump comprising a cylinder, a cylindrical sleeve valve arranged to slide within said cylinder, a piston arranged to reciprocate within said valve, means for reciprocating said piston, and valve operating mechanism comprising a pivoted hollow fulcrum, a lever sliding through said fulcrum, one end of said lever being connected to the reciprocating member and the other end connected to the sleeve valve.

4. A pump comprising a cylinder having ports in its walls, a cylindrical sleeve valve, having ports arranged to cooperate with said cylinder ports, and arranged to slide within said cylinder, a piston arranged to reciprocate within said valve, means for reciprocating said piston, and valve operating mechanism comprising a reciprocating member, a pivoted hollow fulcrum, a lever sliding through said fulcrum, one end of said lever being connected to the reciprocating member and the other end connected to the sleeve valve.

5. A pump comprising a pair of cylin-

ders, a piston for each cylinder, operating means for said pistons, cylindrical sleeve valves arranged to slide between said pistons and cylinders, and means for reciprocating said valves comprising pivoted fulcrums, levers sliding through said fulcrums, one end of each lever being connected to the valve of one cylinder and having its other

end connected to the piston operating means of the other cylinder.

In testimony whereof I affix my signature in presence of two witnesses.

HERMAN DOCK.

Witnesses:

JOHN W. SWEENEY,
CLARENCE E. ROCHE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."