

H. VAN DOREN.

PUMP.

No. 174,989

Patented March 21, 1876.

Fig.1.

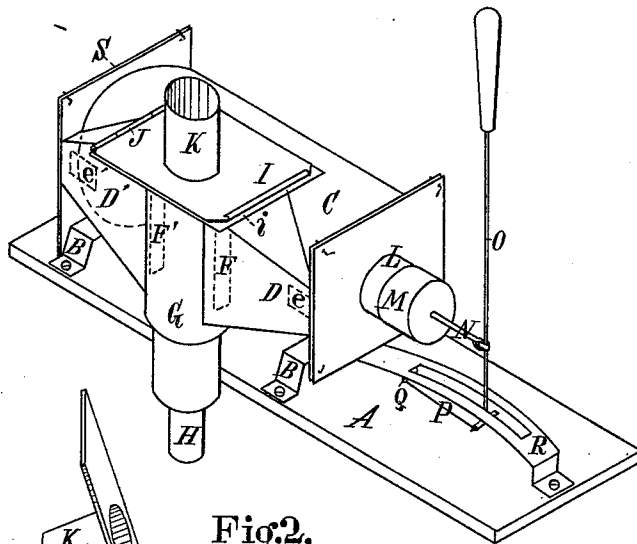
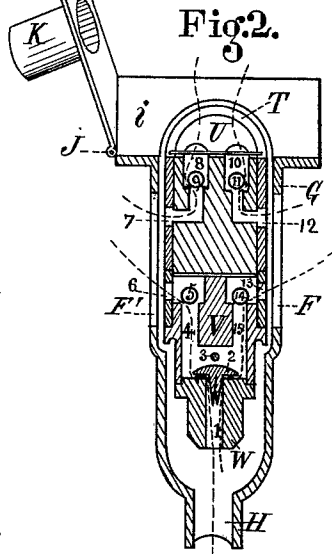


Fig.2.



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UNITED STATES PATENT OFFICE.

HENRY VAN DOREN, OF SOUTH BRANCH, NEW JERSEY.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 174,989, dated March 21, 1876; application filed February 7, 1876.

To all whom it may concern:

Be it known that I, HENRY VAN DOREN, of South Branch, in the county of Somerset, State of New Jersey, have invented a certain new and useful Improvement in Pumps, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which my invention appertains to make and use the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is an isometrical perspective view, and Fig. 2 is a vertical section of the block, showing the arrangement of valves and passages.

Like letters of reference indicate corresponding parts in the different figures of the drawing.

My invention relates to that class of force and suction pumps which are used on ship-board, &c., and are double-acting. It consists in a cylinder having a tight-fitting plunger reciprocating therein, combined with a chamber which communicates with the cylinder on each side of the piston by suitable passages, and with the inlet and outlet pipes, and contains a removable closely-fitting block, having on each side passages provided with suitable valves, which are so arranged and operated that, as the piston moves back and forth, communication is established with the cylinder and the inlet and outlet pipes on each side of the piston alternately, so that a continuous flow is maintained.

The operation of my invention will be readily obvious to all conversant with such matters from the following description: C is the cylinder of the pump, placed in a horizontal position and closed at both ends, and containing a piston or plunger, which may be made tight-fitting in any suitable manner, and which has a reciprocating motion by means of the rod N and handle O. L and M are the packing-chest around the piston-rod. G is a chamber on the side of the pump, and shown in a cylindrical form as the most convenient. H is the inlet-pipe; K, the outlet-pipe; and D D' are passages which form a communication with the cylinder and cham-

ber by the openings E E' and F F'. U is a block, of any suitable material, which fits closely in the chamber, and is provided with passages 1 4 8 10, communicating with the openings F at 13 and 12, and closed by suitable ball-valves 2 5 9 10 14. I is a cover for the chamber, hinged at J. This permits the removal of the block for the purpose of letting water out of the pump, or for cleansing the valves and passages. The union of all the passages and valves in a single removable block I regard as an important feature of my invention. The handle O is attached by a hinge to the arm P, hinged at Q, to the pump-cylinder, and thus the piston-rod acquires a straight motion. The handle moves in a slot, R. When the piston is drawn in the direction of the arrow the valves 2 and 5 open, and the water flows to the cylinder through the passages 1, 4, 6, and D, and the valve 14 remains closed. When the movement of the piston is reversed the water in the cylinder in part of the piston is forced through the opening e' to passage D', and thence to the discharge-pipe by the opening of the valve 9 through the passage 8, while, at the same time, the valve 5 is closed, and the water flows by the opening of valve 14 through the passage 15 and openings F and e and passage D to the cylinder to be forced, when the piston is again moved through the passage 10 to the discharge pipe by the opening of the valve 11. In this manner, by the alternate action of the valves, the flow is maintained continuously.

This pump is compact and simple in construction, and its several parts can be easily kept in order.

Having thus explained my invention, what I claim is—

The combination of the cylinder C, close-fitting piston N, chamber G, pipes K and H, openings e e' F F', passages D D', and block U, provided with the passages 1, 4, 8, 10, and 15, and valves 2, 5, 9, 11, and 14, when constructed and operating substantially as and for the purpose set forth.

HENRY VAN DOREN. [L. S.]

Witnesses:

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