G. H. PATCH.

Double-Acting Force-Pump.

No. 209,507. Patented Oct. 29, 1878.

Fig. 1.

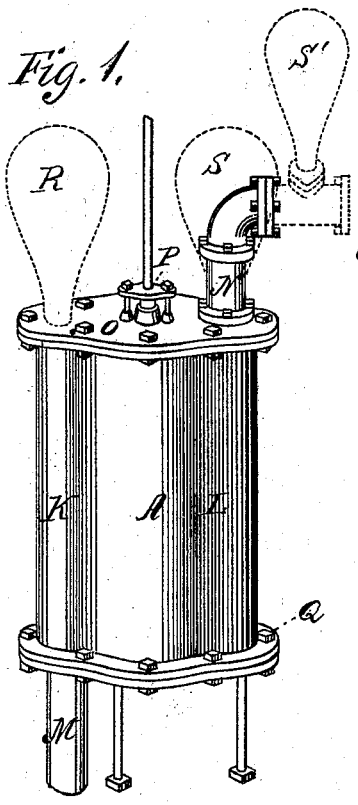


Fig. 2.

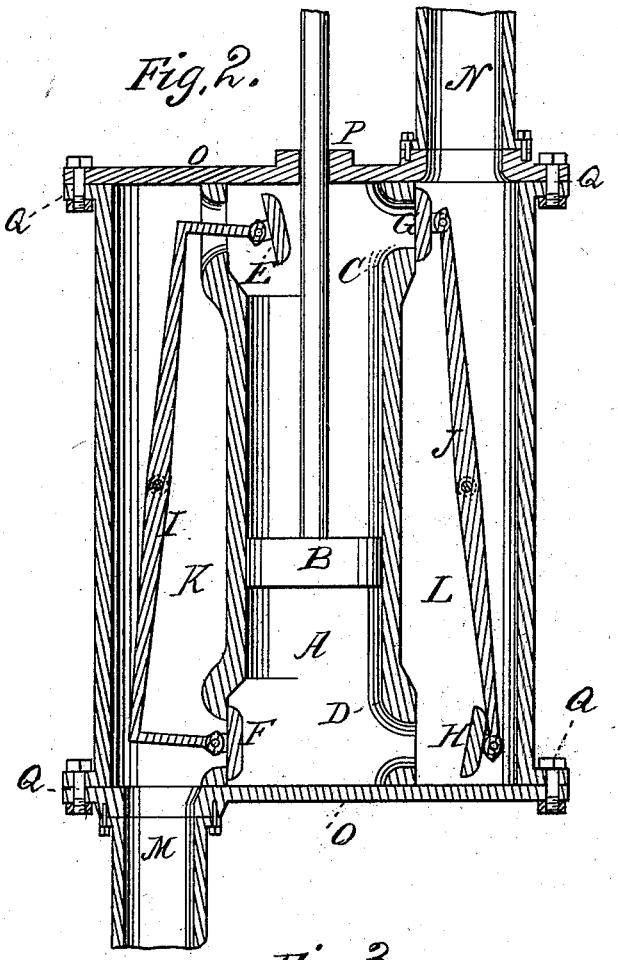


Fig. 4.

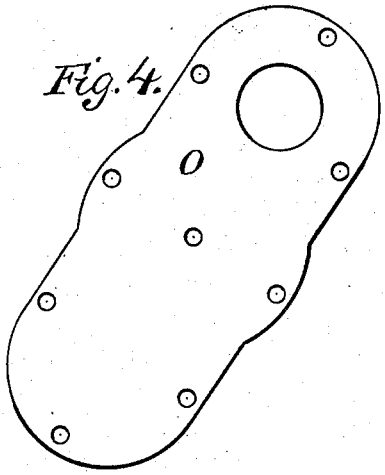
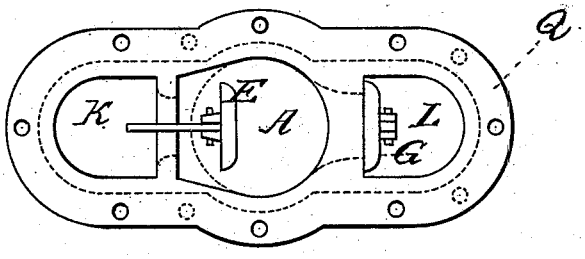


Fig. 3.



WITNESSES

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GEORGE H. PATCH, OF STEVENS POINT, WISCONSIN.

IMPROVEMENT IN DOUBLE-ACTING FORCE-PUMPS.

Specification forming part of Letters Patent No. **209,507**, dated October 29, 1878; application filed February 15, 1878.

To all whom it may concern:

Be it known that I, GEORGE HENRY PATCH, of Stevens Point, in the county of Portage, State of Wisconsin, have invented a new and useful Improvement in Double-Acting Force-Pumps, of which the following is a specification:

The invention relates to double-acting force-pumps for hand or power use.

Many pumps of this class now in use are objectionable on account of their being too complicated, and consequently difficult and expensive to construct. In some the apertures for the passage of water are too small, and in some the water is forced in several directions around sharp angles or curves, in either case causing considerable loss of power.

On account of the arrangement of the valves in many of the pumps now in use they can be used in only one position—vertical or horizontal, as the case may be.

The object of my invention is to provide a double-acting force-pump of such form that water or other liquid shall pass, in as direct a course as possible, through it, and of such form as may be easily and inexpensively constructed; and, further, to secure a free and easy passage of water or other liquid through the valves by the peculiar construction and hanging of them; and, further, by the same means, produce a pump which may be operated equally well in a perpendicular, horizontal, or inclined position.

The nature of the invention consists in the construction and novel arrangement of parts, as will be hereinafter shown and described.

In the accompanying drawing, in which similar letters of reference indicate like parts, Figure 1 is a perspective of a form of pump embodying my invention. Fig. 2 is a vertical section, showing the internal arrangement; Fig. 3, the end view, and Fig. 4 a view of cap of pump.

In the cylinder A, Fig. 2, the plunger B plies between the points C and D. The valves E F G H are hung upon the ends of the levers I J in such a manner as to adjust themselves to the valve-seats. The valve-levers I J are hung by their centers in the receiving-chamber K and the discharge-chamber L. The suction-pipe M is attached to the lower cap O, which is bolted to the flange Q. The discharge-pipe N is attached to the upper cap O, which is bolted in like manner to the upper flange Q. P, stuffing-box for plunger-rod.

The operation of the pump is as follows: When the plunger B is forced downward the valve F is closed by the pressure of the water (or other liquid) against it. Closing the valve E, together with the suction above the plunger, throws open the valve E. As the plunger continues to descend the valve H is forced open, which, with the suction above the plunger, closes the valve G. As the water is forced out of the cylinder at H, through the chamber L, and into the pipe N, a fresh supply of water enters at E, which in turn is forced into the discharge-pipe N through the valve G by the return of the plunger B toward C, by which, also, a fresh supply of water enters at F.

Air-chambers R and S may be attached to the upper cap, directly over the suction-chamber and discharge-chamber, (in place of the discharge-pipe N, in which case the discharge-pipe would be attached to the air-chamber,) or the discharge air-chamber may be attached to the discharge-pipe.

What I claim is—

1. The double-acting pump discharge-chambers, having pivoted therein equal-armed levers, provided with hinged valves or gates, jointed at their opposite ends, and adapted to alternately open and close ports in opposite ends of said chambers, and connecting the same with the main pump-cylinder, substantially as specified.

2. The combination, with the center cylinder, A, and piston-head B, provided with a suitable pump-rod, of the suction-chamber K, opening at top and bottom into said central cylinder, lever I, pivoted within said suction-chamber, and having its bent ends jointed to valves E and F, the discharge-chamber L, opening also into said center-chamber at top and bottom, and having pivoted therein the lever J, with the valves G H jointed to its opposite ends, the suction-pipe M, and discharge-pipe N, substantially as specified.

GEORGE H. PATCH.

Witnesses:

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DAVID L. SWAIN.