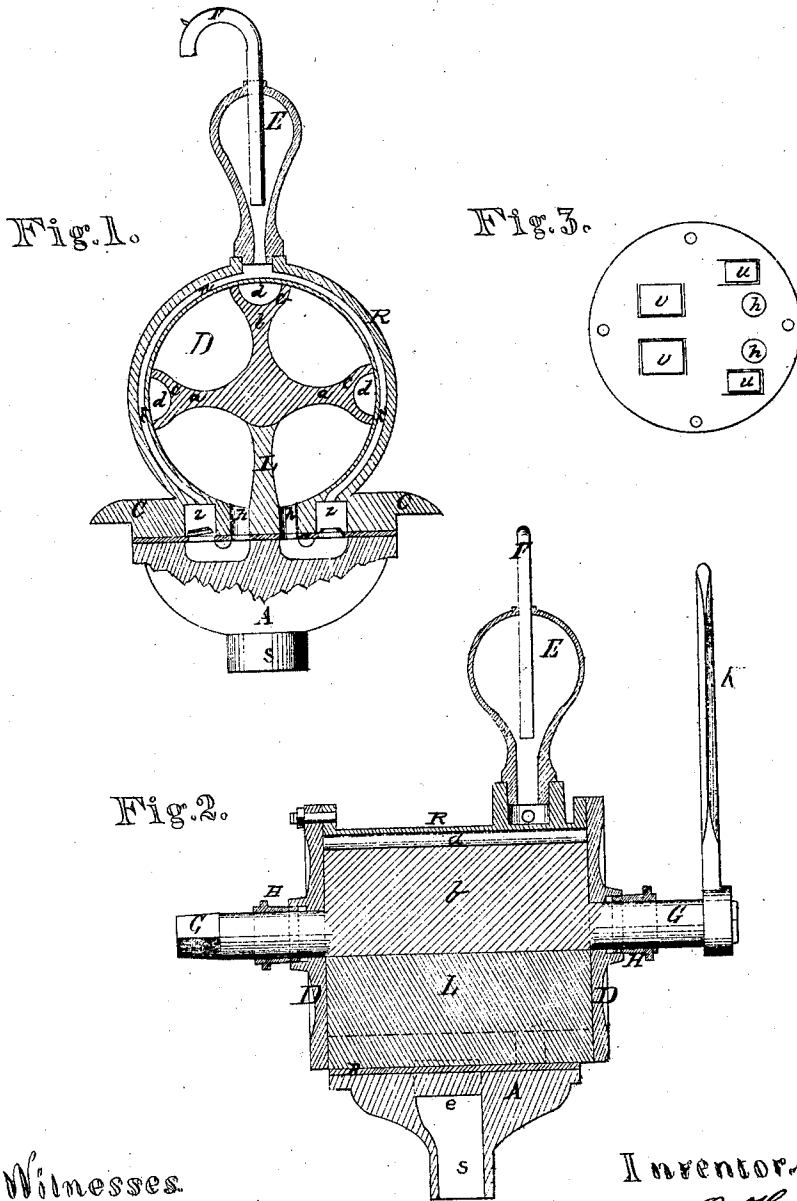


D. O. Holman,

Pump.

No. 108264.

Patented Oct. 11. 1870.



Witnesses.
Cha. Kempton.
Edward P. Massi.

Inventor.
D. O. Holman,
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Atty.

United States Patent Office.

DAVID O. HOLMAN, OF ADAMS, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO T. P. SAUNDERS, OF SAME PLACE.

Letters Patent No. 108,264, dated October 11, 1870.

IMPROVEMENT IN PUMPS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, DAVID O. HOLMAN, of Adams, in the county of Jefferson and State of New York, have invented a new and valuable Improvement in Pumps; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a vertical transverse section of my pump.

Figure 2 is a longitudinal central vertical section of the same.

Figure 3 is a detailed view of the valves.

My invention has relation to single-cylinder double-acting force-pumps; and

It consists in the construction and novel arrangement of the discharging conduits, the valves, and the rock-shaft, with its triple wings and their channeled suction-heads, as hereinafter described.

The letter A of the drawing designates the base of my pump, secured to the circular projection B, which extends below the wings C, upon which the cylinder is designed to rest. These wings extend out on each side of the cylinder R, between the flanches at each end.

The circular base A, and projection B, are designed to be inserted into the mouth of the well or cistern, and the wings to rest on the ledge of the opening, to support the pump.

D D are the cylinder-heads, bolted to the flanches of the cylinder in the usual manner.

E represents the discharge-drum.

F is the discharge-pipe.

G is the rock-shaft, provided with stuffing-boxes H H, where it passes through the cylinder-heads.

K represents the operating-lever, designed to be worked from side to side. Two of these levers may be employed, if necessary, one at each end of the shaft.

L is a partition, dividing the cylinder-chamber below the rock-shaft horizontally from head to head. The upper edge of this partition is curved to suit the form of the rock-shaft, in order that there shall be no leakage.

The rock-shaft is provided with three wings, which extend radially outward therefrom to the cylindrical wall of the chamber, and longitudinally from one cylinder-head to the other.

When the parts are in equilibrium, two of these wings, *a a*, extend outward laterally from the rock-shaft, while the position of the third, *b*, is vertical, extending upward from the top thereof.

By these wings and the partition L, the chamber is partitioned into four subdivisions, of which the volumes of the upper two are always equal, while those of the two lower, on each side of the stationary partition L, are constantly varying with respect to each other.

As each wing approaches the wall of the cylinder, it is expanded to form a suction-head, *c*, which is grooved longitudinally at *d*, and suitably packed, to form a tight joint. Packing is also used between the cylinder and its heads, between the base A and the projection B, and wherever else it may be needed.

Through the base of the cylinder or projection B are six openings, four of which, *e h*, open into the chamber of the cylinder, and two of which, *z*, communicate with the discharging-passages *n n*, which encircle the cylinder exteriorly, and lead to the discharging-drum on the top of the same.

The inlet-valves are designated by the letters *v v*, and the discharge-valves by *u u*.

The operation of my pump may be thus described:

By carrying the lever to the left, the right wing of the rock-shaft will be elevated, thereby drawing in water from the well through the inlet-pipe *s*, and its right branch *e* into the lower subdivision of the water-chamber on the right of the partition L. In this action on the right of this partition, the valve *v* will be open and the valve *u* closed, while on the left, the position of the valves will be reversed. When the lever is forced back to the right, the water in the lower right subdivision will be forced through the passages *h z*, and valve *u*, into the drum E, whence it is ejected through the discharging-spout.

The discharging-channels *z z* are cast in the metal of the cylinder. The vertical wing and the branching of the suction-heads, serve an important purpose in interrupting communication between the lower subdivisions on each side of the partition L, and thereby preventing the escape of water from the collapsing subdivision to that which is expanding.

I claim as my invention—

The rock-shaft G, having the vertical wing *b* and the lateral wings *a*, suction-head *c*, longitudinally grooved, in combination with a cylinder, R, provided with a stationary partition, L, extending from the floor thereof to the rock-shaft, substantially as specified.

In testimony that I claim the above, I have hereunto subscribed my name in the presence of two witnesses.

DAVID O. HOLMAN.

Witnesses:

JOHN MONROE,
W. H. CROMWELL.