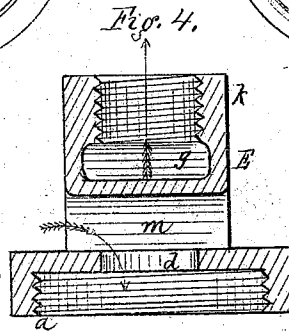
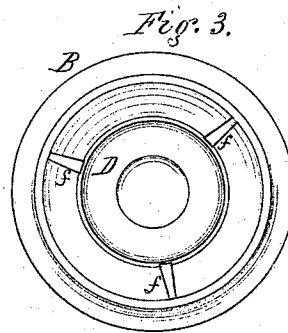
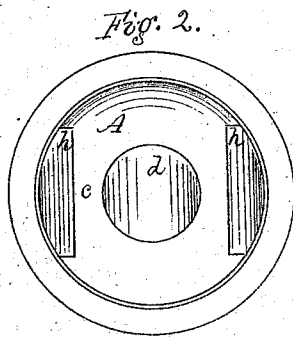
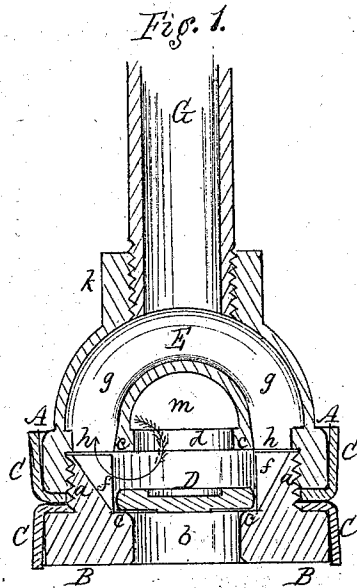


C. B. GILL.

Pump-Pistons.

No. 135,905.

Patented Feb. 18, 1873.



Witnesses.

Archib. Baine

J. D. Doyle

Inventor.

Calvin B. Gill,

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attorney.

# UNITED STATES PATENT OFFICE.

CALVIN B. GILL, OF ROCHESTER, NEW YORK.

## IMPROVEMENT IN PUMP-PISTONS.

Specification forming part of Letters Patent No. 135,905, dated February 18, 1973.

*To all whom it may concern:*

Be it known that I, CALVIN B. GILL, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain Improvement in Pump-Pistons, of which the following is a specification:

### *Nature of the Invention.*

My improvement belongs to that class of double-acting pumps in which the cylinder or case has a side passage to allow the water to pass over to the top of the piston to supply the discharge.

The invention consists in the construction and arrangement of the piston, as hereinafter described.

### *General Description.*

In the drawing, Figure 1 is a vertical section of my improved piston; Fig. 2, a bottom or under view of the upper portion of the piston; Fig. 3, a top view of the lower part of the piston; Fig. 4, a section, at right angles to Fig. 1, of the upper part of the piston.

A represents the upper, and B the lower, part of the piston. These parts are screwed together by threads *a*, and they clamp between them the double and reverse leather packings C C. The object of these packings is to render the pump more effective as a suction-pump, though it may be used without them, by making the piston itself of considerable extent and closely fitting to the sides of the cylinder. The lower half of the piston has the usual induction-port *b*, which is covered by the flat disk-valve D. This valve plays between the seats *c c* of the upper and lower parts of the piston, covering, alternately, the ports *b d*—the former serving as the induction-port to the down-stroke, and the latter the induction-port to the up-stroke—the water being supplied to it from the side passage of the cylinder, as before described. The valve is retained in position in its movement by means of square edges, radial wings, or guides, *f f*, as clearly shown in Figs. 1 and 3. These wings are cast with the lower half of the piston. The edge or periphery of the valve is rounded, as shown, in order to keep it in place and keep

it from catching or binding. The upper half of the piston is constructed with an arched water-passage, E, leaving the double passages *g g*, extending from the induction-ports *h h*—on either side of the central induction-port *d*—upward to the discharge-head *k*, into which screws the eduction-pipe G. In its cross-section the water-way E occupies only a portion of the diameter of the piston, as shown in Fig. 4; and it leaves a clear arched passage, *m*, for the induction water to pass from the cylinder into the piston in the up-stroke.

The operation is as follows: In the down-stroke the valve D is forced up against the seat *d*, and the water in the lower compartment of the cylinder is forced up around the valve, through the ports *h h* and water-passages *g g*, into the discharge-pipe. On the reverse or up stroke the valve is forced down over the port *b*, and the water in the upper compartment of the cylinder passes inward, laterally, around the water-passage E and through the arch *m* down into piston through port *d*; and thence up through ports *h h*, as before. The pump is thus made double-acting, with a continuous stream.

A special novelty in this case is the construction of the piston with the arched double water-way E, for the eduction of the liquid, leaving the arched passage *m* for the passage of the water laterally around it into the piston. This is new, so far as I am aware. It enables me to apply the packings C C, and thus make a perfect-acting suction-pump, which cannot well be done in the old style where the top of the piston is flat.

I do not claim the use of a double-acting piston, as it is well known.

Another advantage results from the use of the flat valve D, located directly in the center so as to play between the two induction-ports, and kept in place by the guides *f f*. This also enables me to use the outer leather packings, which cannot be done where the valve is inserted through the periphery of the piston, as in other pumps. This piston is effective in use, and by the suction arrangement can be employed in many places where the old-fashioned solid piston, for use in submerged pumps,

cannot be so well employed. The piston is cheap in construction and easily applied.

*Claims.*

What I claim, and desire to secure by Letters Patent, is—

1. The construction of the piston of a double-acting pump, with the arched water-passage E, leaving a clear passage, *m*, for the entrance of the induction water beneath it to the piston, as herein shown and described.

2. The arrangement, with the parts A B of

a double-acting piston, of the central disk-valve D, playing between the induction-ports *b d*, and the radial wings or ways *f f*, serving as guides to the valve, substantially as herein shown and described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

CALVIN B. GILL.

Witnesses:

R. F. OSGOOD,  
ARCHIE BAINE.