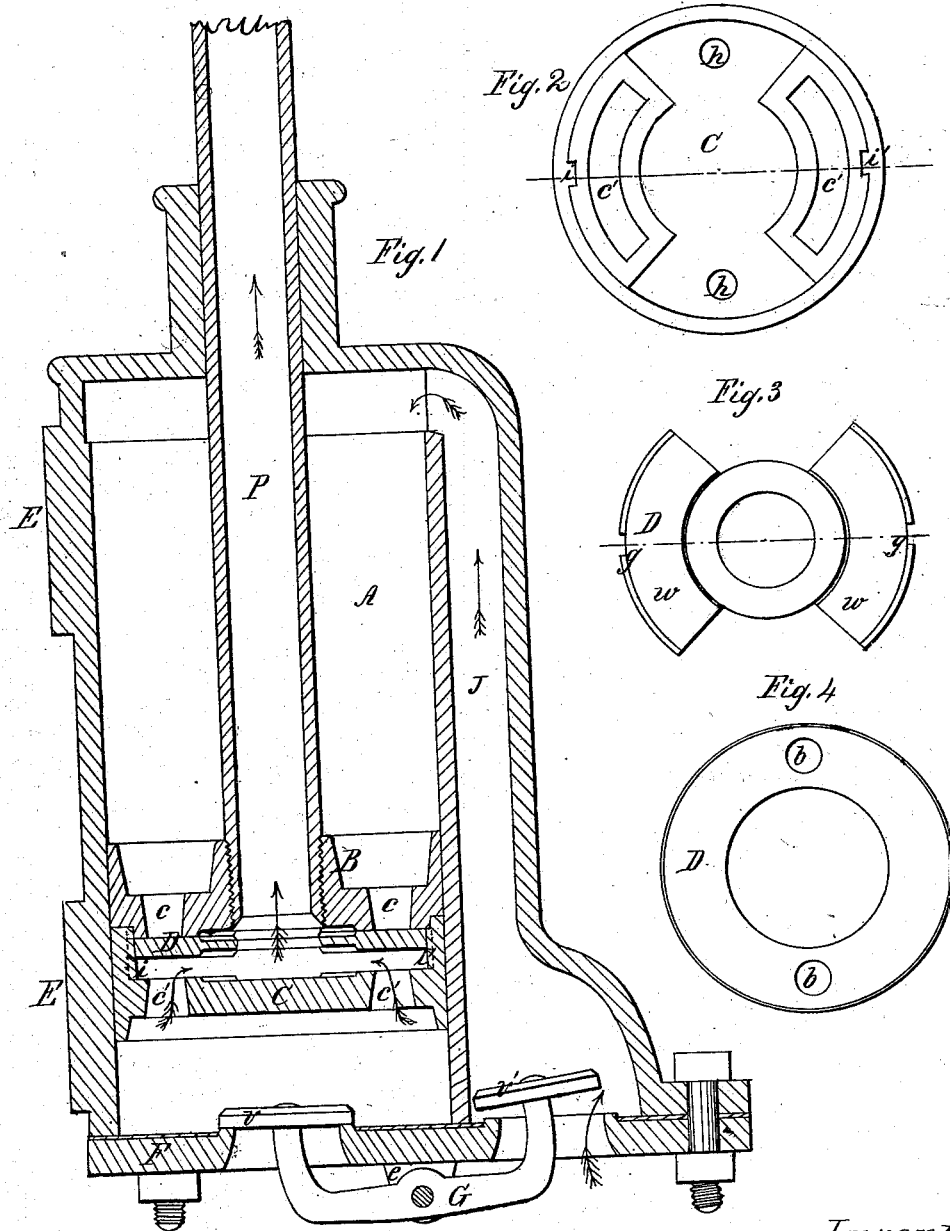


A. D. Foster, Pump Lift,

N^o 48,165.

Patented June 13, 1865.



Witnesses;

James Patton
Wm. O'Neil

Inventor

A. D. Foster
By his atty and Counsellor

UNITED STATES PATENT OFFICE.

A. D. FOSTER, OF JORDAN, NEW YORK.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 48,165, dated June 13, 1865.

To all whom it may concern:

Be it known that I, A. D. FOSTER, of Jordan, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Submerged or Hollow Piston-Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a vertical section of my invention. Fig. 2 is a plan or top view of the lower half, C, of the skeleton piston head or plunger. Fig. 3 is a plan of the valve D detached. Fig. 4 shows another construction of valve D.

Like letters represent like parts in all the figures.

This invention relates to that class of well-pumps called "submerged" or "hollow-piston" pumps; and it consists in a peculiarly-constructed plunger, and in pivoting the bridge of the two check-valves to ears projecting from the under side of the valve-plate, which avoids the objection heretofore existing in this class of pumps caused by the opening or communication from one chamber to the other made for the valve-bridge.

To enable others to work my invention, I will describe its construction and operation.

I use the ordinary cylinder A, having a side chamber, J, and having lugs (not shown in the drawings) projecting each way at E, by which it is bolted to the ordinary supporting timber or plank.

The plate F, on which the seats of the check-valves *v* and *v'* are formed, has two ears, *e*, cast to the under side, between and to which the bent lever G is loosely pivoted. The valves *v* and *v'* are rigidly attached to the said lever G, and consequently when either is open the other must be closed, and vice versa. I use a hollow piston, P, as shown in Fig. 1.

The head or plunger is composed of two parts, B and C, each having a set of valve openings or ports, *e* and *e'*. The upper half, B, is fitted into C, as seen in the drawings, so as to leave sufficient space between the valve-seats of each to receive the valve D and afford it proper movement. The ports in B and C are made to register by notching the inner

rim of B to receive the top of the guide *i*. The wings *w* of the valve are also notched to fit the guides *i* and *i'*. B and C are clamped together by two bolts through the openings *h*. Fig. 2. The object of such an adjustment of the parts is that the wings *w*, Fig. 3, of the valve-plate D shall always cover the seats of B and C alternately.

The valve D may be made as shown in Fig. 4, which is simply an annular disk-valve. In this case the exact registry of the ports is not essential, for the valve would cover the seats of the upper or lower ports just as well. The clamping-bolts fitting loosely through the holes *b* would be a sufficient guide.

It will be seen that when the piston P descends the check-valve *v* is closed and *v'* opened, and the valve D forced up, so as to close the upper ports of the plunger. This drives the water from below the plunger in the cylinder A up through the piston, and at the same time the upper portion is being filled. When the piston ascends the check-valves are reversed and the valve D closes the lower ports of the plunger and opens the upper ones, so that the water from the upper portion of the cylinder is forced out through the piston, thus producing a perpetual discharge.

The valves and valve-seats in this pump are all metal, and there is no packing, except between the cylinder A and the plate F. It is a perfect anti-freezing pump, for the water must always settle to the level of the water in the well when the action of the pump ceases, because one or the other of the check-valves *v* and *v'* is always open.

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

The combination and relative arrangement of the valves *v* and *v'*, when rigidly attached to the pivoted lever G, with the hollow piston P, having a head composed of the plates B and C, between which is arranged the disk-valve D, which is constructed and operates conjointly with the other parts, in the manner shown, and for the purposes described.

A. D. FOSTER.

Witnesses:

ASA H. BILLINGS,
WM. S. LOUGHBOROUGH.