W. LOUDON.

Double-Acting Lift-Pump.

No. 218,291. Patented Aug. 5, 1879.

Fig: 3.

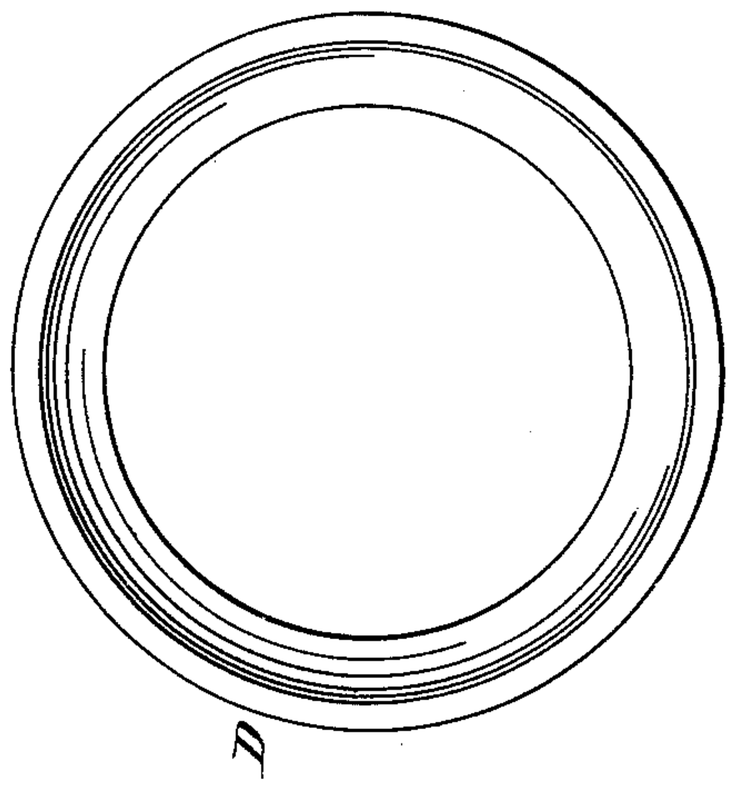


Fig: 4.

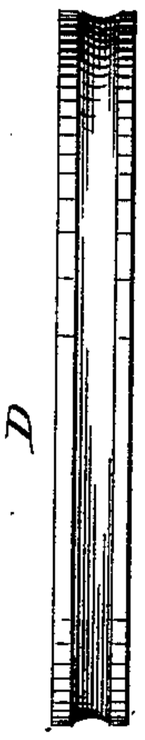


Fig: 1.

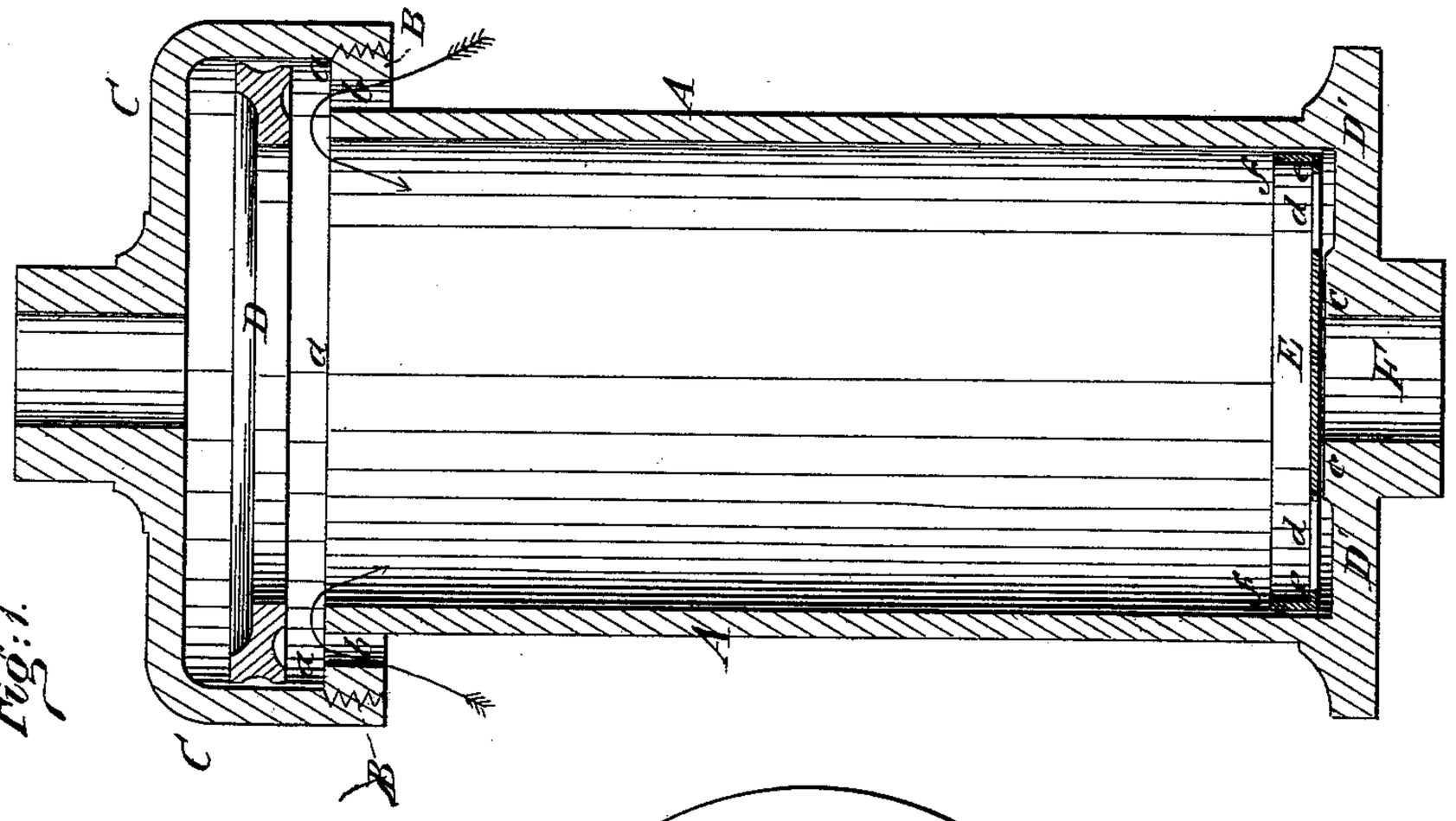
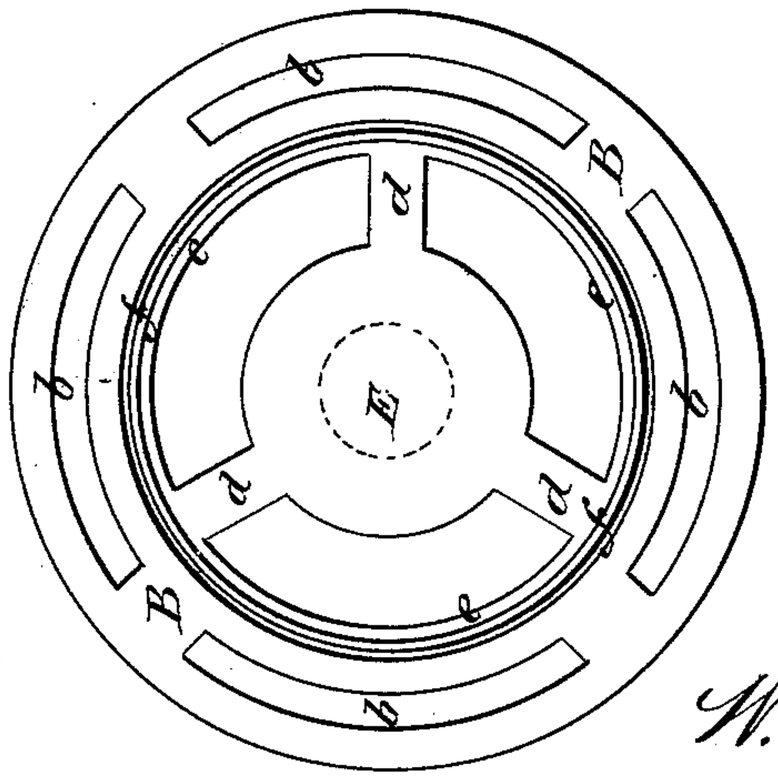


Fig: 2.



WITNESSES:

Chas. Nicol.

C. Sedgwick

INVENTOR:

W. Loudon

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM LOUDON, OF SUPERIOR, NEBRASKA.

IMPROVEMENT IN DOUBLE-ACTING LIFT-PUMPS.

Specification forming part of Letters Patent No. **218,291**, dated August 5, 1879; application filed May 27, 1879.

To all whom it may concern:

Be it known that I, WILLIAM LOUDON, of Superior, in the county of Nuckolls and State of Nebraska, have invented a new and Improved Double-Acting Lift-Pump, of which the following is a specification.

My invention relates to improvements in the construction of the pump cylinder and the valves for opening and closing the ports through which the water passes into the cylinder.

Heretofore the water has been admitted to the cylinder above the piston through hinged valve or puppet-valves in the head of the cylinder, opening downward. This is objectionable for several reasons: first, sand and gravel are apt to fall down through the openings when the valves are open, and interfere with the working of the several valves in cylinder and piston; secondly, when the piston lifts, the valves in the cylinder-head and that in the bottom of the piston close simultaneously in opposite directions, and thus create a partial vacuum, causing a rattling and jarring in operating the pump.

Now, the object of my invention is to provide an arrangement that will be free from these objections.

It consists in providing the upper end of the cylinder, on the outside, with a flange, to which the upper head is screwed or otherwise attached. Through this flange are made water-ways, causing the water to pass upward to enter the cylinder.

In the accompanying drawings, Figure 1 is a longitudinal section of my improvement. Fig. 2 is a top plan of the cylinder with the head removed, and looking down into it. Fig. 3 is a view of the ring-valve, and Fig. 4 is an edge view of the same.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the pump-cylinder, having at its upper end an outwardly-projecting flange, B, cast with its upper edge flush with the end of the cylinder, so as to form a valve-seat, *a*. Through the flange are made segmental vertical slots *b*, forming water ways or ports for the admission of water from the outside to the inside of the cylinder above the piston.

D represents the ring-valve, which is placed in the space between the head and the cylinder, so as to rest on the cylinder *a* and close the ports *b*. It plays up and down between this seat and the head, opening and closing the ports in obedience to the movement of the piston. Its edge and bottom are grooved, so as to reduce the extent of the ground face; but this is not essential. This cylinder is submerged and connected with the pump-chamber at the surface by a hollow rod passing down and opening into the piston working in the said cylinder. As the piston is forced down a vacuum is created above it, and the water rushes up through the ports *b*, lifting the ring-valve, and passing into the cylinder above the piston, as indicated by the arrows. On the return-stroke the valve D closes, and the water passes down into the piston, in the usual manner of double-acting lift-pumps.

The ports *b* may be made very narrow, so as to exclude larger gravel; but the upward movement of the water itself will make it difficult, if not impossible, for gravel, or anything else but the water, to get into the cylinder. Again, the downward movement of the valve D being in the same direction as the movement of the valve in the lower end of the piston, no vacuum is created, as is apt to be the case when, on the upstroke, the upper valve of the cylinder and the lower valve of the piston close in opposite directions.

I am aware that it is not new to provide an inner cylinder with flanges having vertical slots or openings and a ring-valve at each end; but

What I claim as new and of my invention is—

The pump-cylinder A, provided at the top with an outwardly-projecting slotted flange, B *b*, having its upper edge flush with said top of cylinder, to form a valve-seat and support a valve, D, between the head and cylinder, as shown and described.

WILLIAM LOUDON.

Witnesses:
W. C. DONN,
C. SEDGWICK.