W. A. Barnes,

Pump Lift,

No. 52,377. Patented Feb. 6, 1866.

Fig. 4.

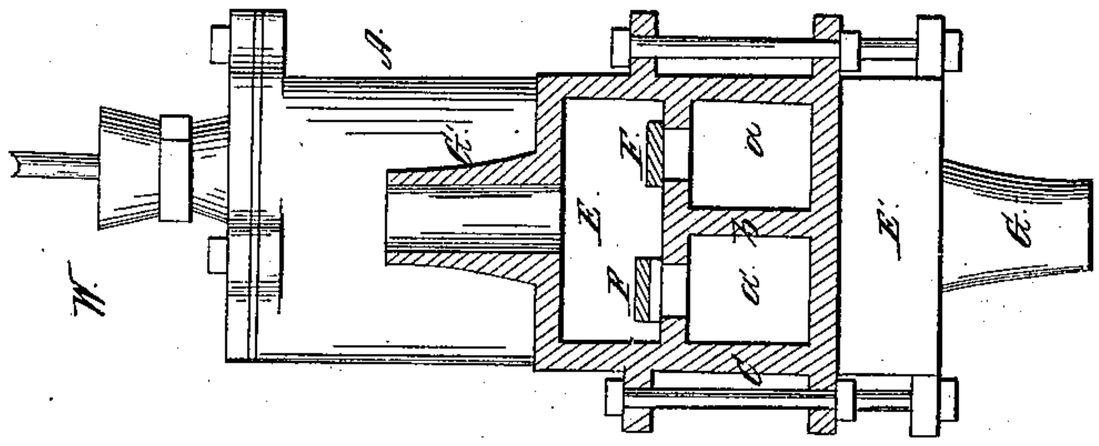


Fig. 3.

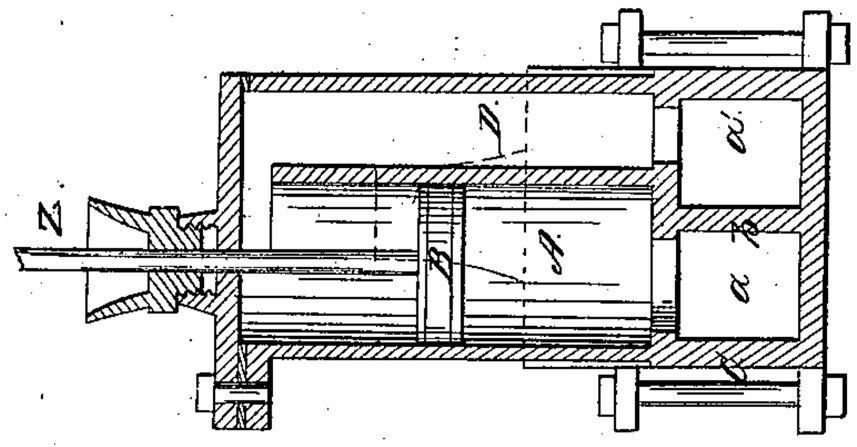


Fig. 2.

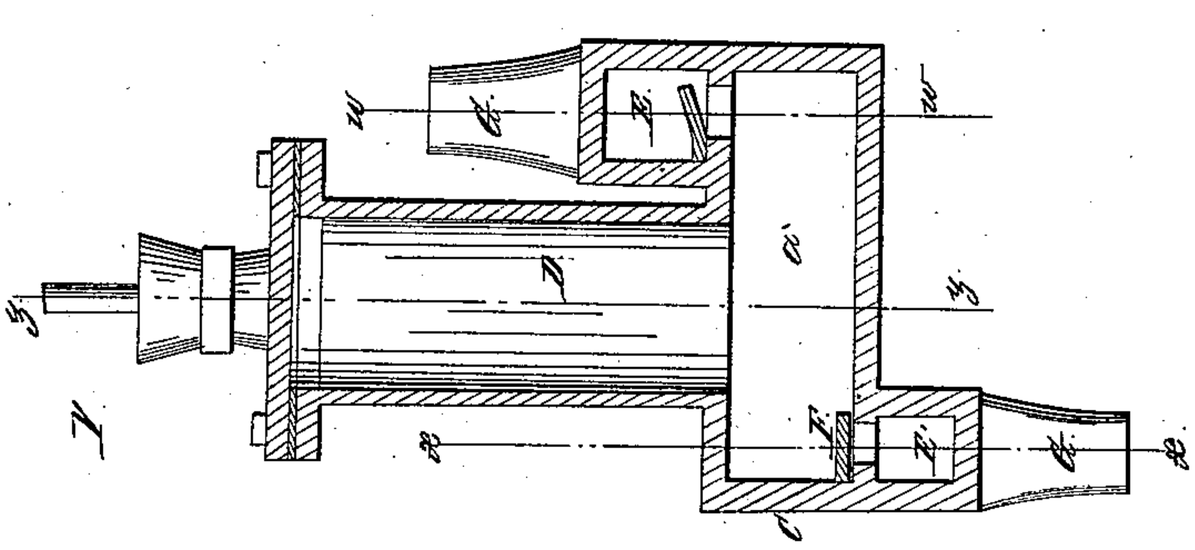
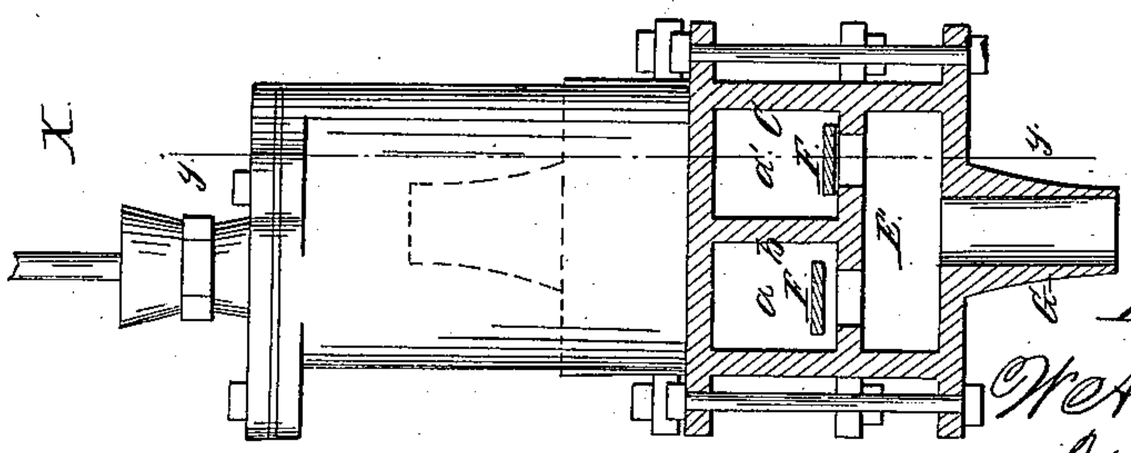


Fig. 1.



Witnesses:

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UNITED STATES PATENT OFFICE.

W. A. BARNES, OF DECATUR, ILLINOIS.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **52,377**, dated February 6, 1866.

To all whom it may concern:

Be it known that I, W. A. BARNES, of Decatur, in the county of Macon and State of Illinois, have invented a new and Improved Pump; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a vertical section of the same, taken in the line *y y*, Fig. 1; Fig. 3, a vertical section of the same, taken in the line *z z*, Fig. 2; Fig. 4, a vertical section of the same, taken in the line *w w*, Fig. 2.

Similar letters of reference indicate like parts.

This invention has for its object the attaching of tubing to submerged pumps with greater facility than hitherto, so that the pump may be placed at any point within the well and the tubing attached both above and below without any difficulty whatever.

The invention has, further, for its object a novel arrangement of partitions and valves, whereby the pump will be rendered double-acting by an extremely simple means.

A represents the pump-cylinder, and B the piston working therein. The cylinder is placed upon a box, C, which is divided into two compartments, *a a'*, by means of a longitudinal vertical partition, *b*. (See Figs. 1, 3, and 4.) The lower end of the pump-cylinder A communicates with the compartment *a* of box C, as shown in Fig. 3, while a chamber, D, at the side of the cylinder A, communicates at the lower end with the other compartment, *a'*, of box C, (also shown in Fig. 3,) the upper end of said chamber communicating with the upper end of the cylinder A.

At each end of the box C there is affixed a valve-box, one, E, being at the upper side of box C, and the other, E', below it, as clearly shown in Fig. 2, each compartment of the box C communicating with the valve-boxes E E' by means of valves F, all opening upward, the valves of box E opening into said box, while those of box E' open into the compartments *a a'* of box C.

The valve-box E' has a pendent collar or flange, G, the exterior of which is of taper form and slightly concave, and the valve-box E is provided with a similar collar or flange, G', at its upper side. By means of these taper flanges the tubing or pipes may be readily fitted on the collars or flanges and a snug, tight joint obtained.

The operation is as follows: When the piston B is drawn upward a suction is produced in the compartment *a* of the box C, as the cylinder A communicates directly with said compartment. The valve F of box E' in compartment *a* opens upward and admits the water into *a*, and thence into the lower part of cylinder A, underneath the piston B, the valve F of box E, over *a*, being kept closed under the suction. The water above the piston B is forced down the chamber D into the compartment *a'* of box C and up through the valve E, over *a'*, into box E, and thence up through the eduction-pipe on the flange or collar G'. As the piston B descends the water below it, which was drawn up at the previous ascent of the piston, is forced down into the compartment *a*, the valve F over box E' being closed under the pressure, and the valve F over *a* in box E opened, so that the water will be forced up through box E and thence through the eduction-pipe, and during the descent of the piston a suction is of course produced in the upper part of the cylinder, the valve F of box E' at the end of the compartment *a'* opening to admit water into *a'*, up through the chamber D, and thence into the top of the cylinder A, the valve F, at the other end of *a'*, on the box E, being kept closed under the suction and the pressure of the water in E.

Thus it will be seen that by this simple arrangement of the pump-cylinder with the water passages or compartments and valve-boxes a double-acting pump is obtained, or one which will throw a continuous stream.

The pump may be constructed at a very moderate cost. The valves are rendered very accessible for repairs, and there are no parts liable to get out of repair or become deranged by use.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination and arrangement of the pump-cylinder A and chamber D with the box C, divided into two compartments, *a a'*, which communicate, respectively, one with the cylinder A and the other with chamber D, and provided at its ends with the boxes E E', which communicate with the compartments *a a'* by means of the valves F, substantially as described.

2. As combined and arranged with the above, the taper or conical flanges G G' of the boxes E E', for the purpose of facilitating the adjustment of the tubing or pipes to the pump, as set forth.

The above specification of my invention signed by me this 6th day of October, 1865.

W. A. BARNES.

Witnesses:

A. A. STAFFORD,

WM. LINTNER.