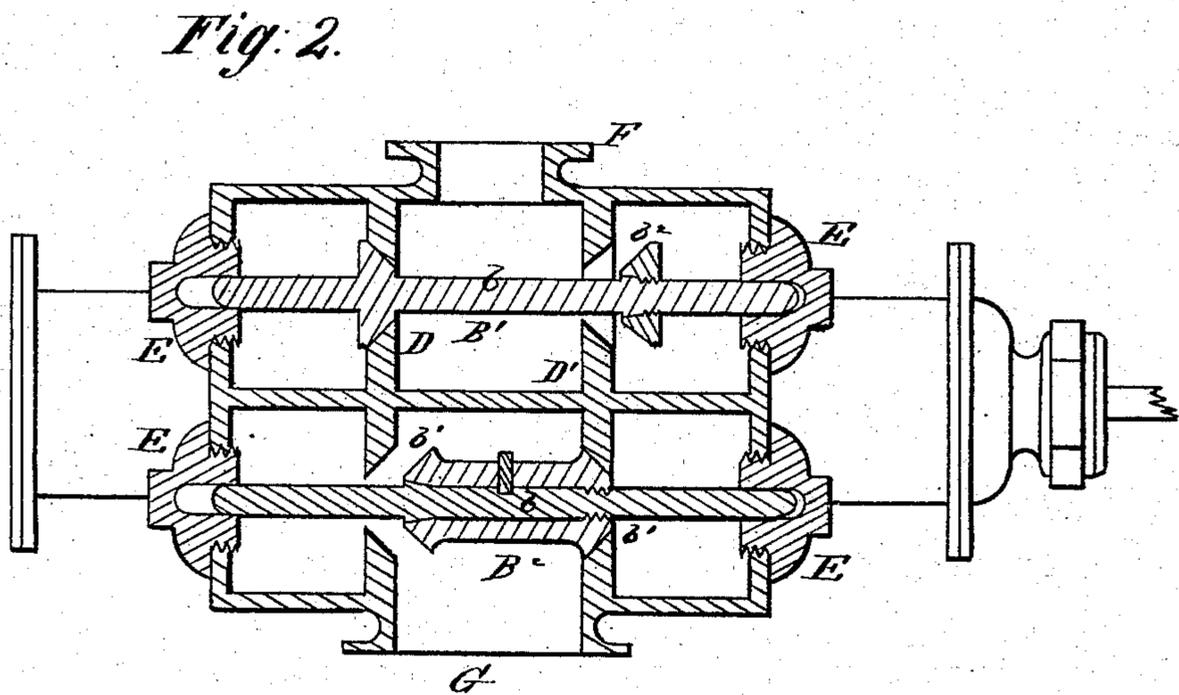
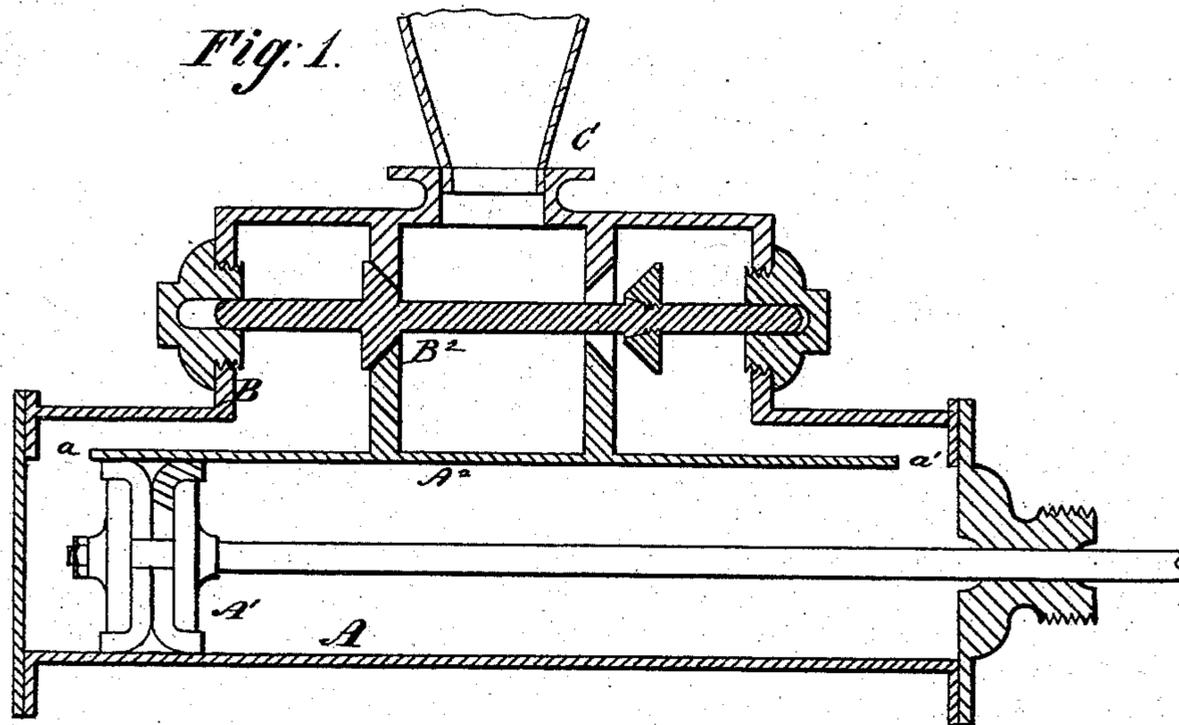


J. FERGUS.
Pumps.

No. 156,782.

Patented Nov. 10, 1874.



Witnesses
 Engine V. Cadorn
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By

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UNITED STATES PATENT OFFICE.

JAMES FERGUS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **156,782**, dated November 10, 1874; application filed April 18, 1874.

To all whom it may concern:

Be it known that I, JAMES FERGUS, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a vertical longitudinal section of my invention, and Fig. 2 a horizontal section.

The nature of my invention consists in the peculiar construction and combination of parts, as hereinafter fully described.

Referring to the accompanying drawings, which illustrate my invention, A represents the cylinder; B, the valve-box, and C the air vessel. A¹ is the piston moving within the cylinder A, which is separated from the valve-box B by the diaphragm A², having openings *a a'* at each end. B¹ B² show the valves, consisting of stems *b b*, which slide in the bosses or end bearings E, and the disks or collars *b¹ b²* having their seats in the transverse diaphragms D D. F and G are, respectively, the suction or inlet and discharge nozzles or passages.

The operation of the pump is as follows: The piston A¹, being moved toward the end of the cylinder A, produces a suction through the passage *a* or *a'*, from which it moves, and a pressure through the passage *a* or *a'* toward which it moves, said suction and pressure being exerted simultaneously on both the valves

B¹ and B². In other words the suction is upon one of the disks *b¹* when the pressure is upon the other disk *b¹*, and the same of the disks *b²*. The suction, too, is upon the disk *b¹* at the same time that it is exerted upon the adjacent disk *b²*, the pressure being exerted on the other two disks *b¹ b²* simultaneously. When, however, one disk or valve, *b¹*, is closing, the adjacent disk or valve, *b²*, will be opening, and vice versa.

The simplicity and economy of this construction are its chief advantages. It will be observed that the two sets of valves in the one box are worked at the same time by a single cylinder, the forces of suction and pressure being exerted simultaneously. Another advantage of this construction is that, owing to the peculiar construction and arrangement of the valves, it will work in any position, either horizontally, perpendicularly, or otherwise.

What I claim as my invention is—

In combination with the valve-box B, containing the two sets of double sliding valves B¹ B², having stems sliding in the end bosses E, the single cylinder A having a piston, A¹, and connecting with said valve-box by means of the end openings *a a'*, the several parts being combined, and operating substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of April, 1874.

JAMES FERGUS.

Witnesses:

EUGÈNE P. EADSON,
RICHARD KOMAS.