

R. Henry,
Double-Acting Pump
No 35,609, *Patented June 17, 1862.*

Fig. 1

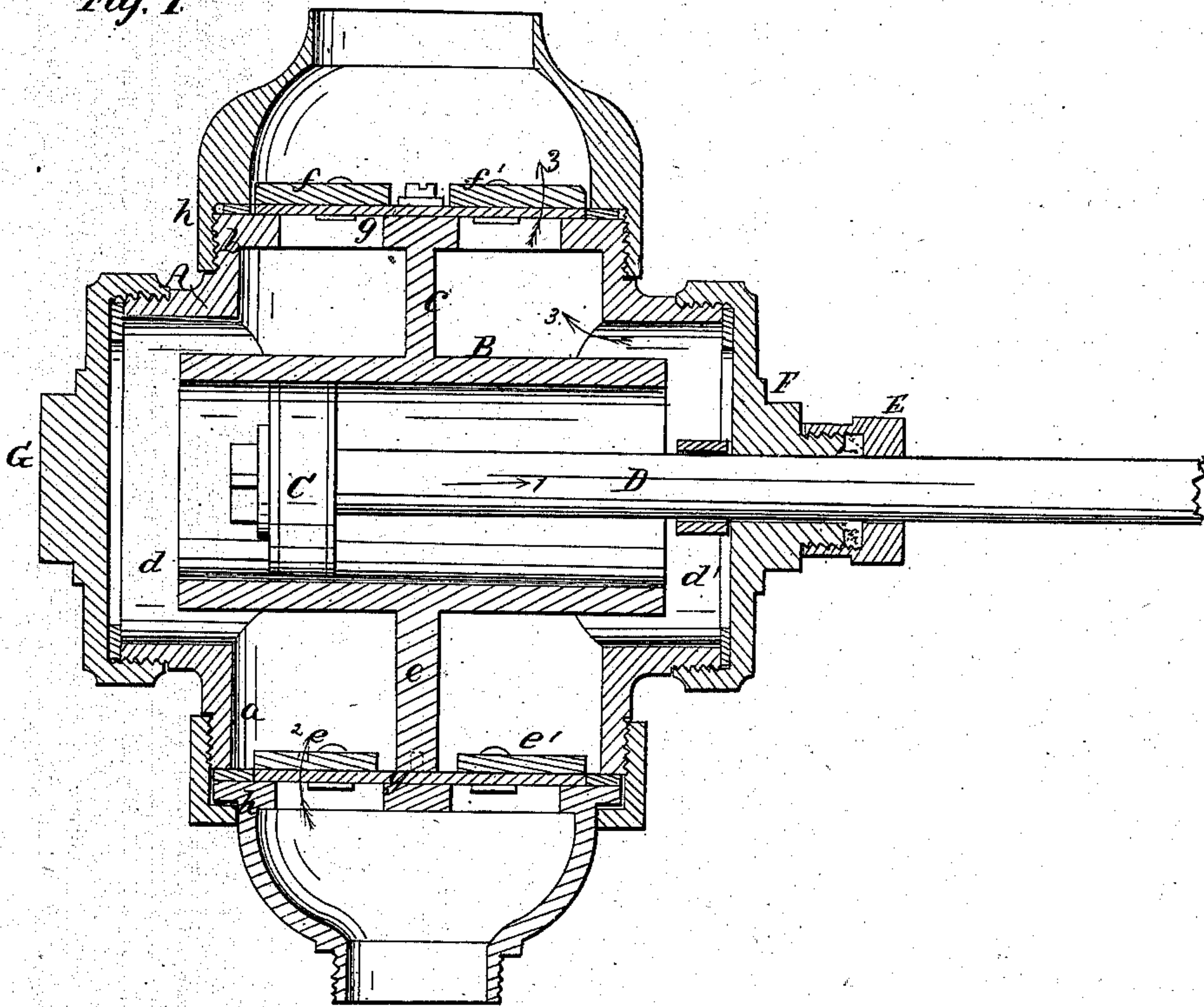
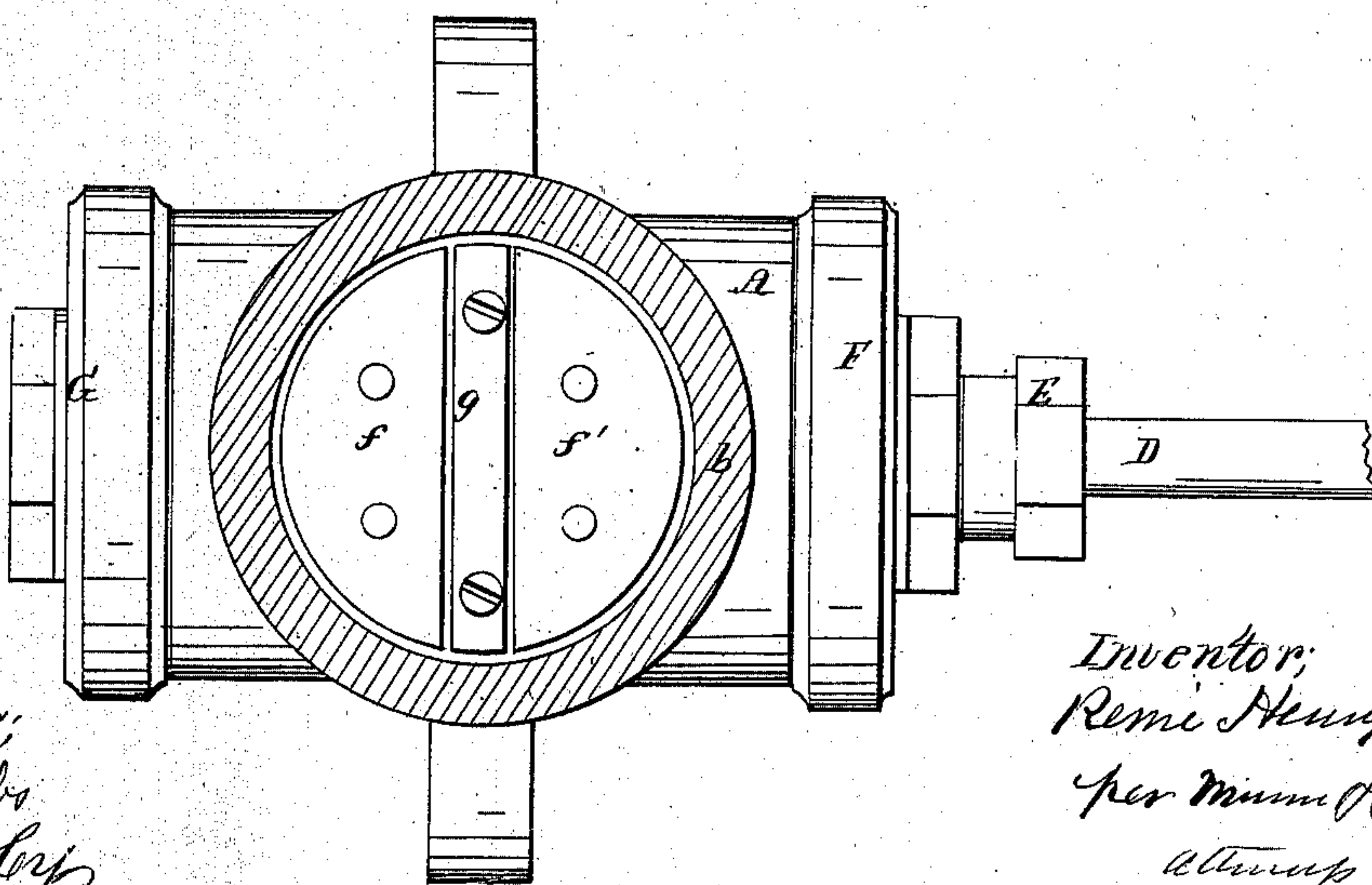


Fig. 2.



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REMI HENRY, OF MORRISANIA, NEW YORK.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 35,609, dated June 17, 1862.

To all whom it may concern:

Be it known that I, REMI HENRY, of Morrisania, in the county of Westchester and State of New York, have invented a new and Improved Pump; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a central longitudinal vertical section of my invention. Fig. 2 is a plan or top view of the same.

Similar letters of reference indicate corresponding parts in the two figures.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a metal shell of cylindrical form, and having two cylindrical flanges or projections, *a b*, at opposite sides and at right angles with it, the lower flange, *a*, having the induction-pipe attached, and the upper one, *b*, the eduction-pipe secured to it.

B is the pump-cylinder, which is within the shell A, and connected thereto by vertical plates *c c*, which extend entirely across the shell A and flanges *a b*, and serve as partitions to divide the same centrally above and below the cylinder B, forming two compartments, *d d'*, as shown clearly in Fig. 1.

The cylinder B is open at both ends, and is bored properly to receive the piston C, the rod D of which works through a box, E, on a cap, F, screwed on the end of shell A. The rod D is also the piston-rod of the engine, by which the pump is operated or driven. The opposite end of the shell A is closed by a cap, G, which is screwed thereon.

The cylinder B has a concentric position within the shell A, and the shell, cylinder, flanges, and partitions may be all cast in one piece.

The flange A at its lower part, within the compartment *d*, is provided with a valve, *e*, opening upward, and a similar valve, *e'*, is at the lower part of the flange, within the compartment *d'*, said valves when open forming a communication between the induction-pipe and the compartments *d d'*. In the upper part of the flange *b* there are two valves, *f f'*,

opening upward, one valve being within the compartment *d* and the other in the compartment *d'*, said valves when open forming a communication between said compartments and the eduction-pipe.

The valves *e e' f f'* may be attached to leather disks *g g*, secured to the ends of the flanges *a b* by sockets *h*, to which the induction and eduction pipes are attached.

The operation of the pump is as follows: Suppose, for instance, that the compartment *d'* be filled with water and compartment *d* empty. When the piston C moves in the direction indicated by the arrow 1, the valve *e* is open and the valve *f* is closed, the water passing up from the induction-pipe into compartment *d*, as indicated by arrow 2, at the same time the water in *d'* is forced up through valve *f'* and out through the eduction-pipe, as indicated by arrows 3, the valve *e* being kept closed under the pressure of the water in *d'*. During the return movement of piston C the chamber *d'* is filled, in consequence of the valve *e'* opening and the valve *f'* closing by the suction in *d'*, and the water in *d* is forced into the eduction-pipe through valve *f*. The two compartments *d d'*, therefore, it will be seen, are alternately filled with water and discharged, and a continuous stream forced from the pump.

By this construction and arrangement of the pump several advantages are obtained, to wit:

First. The pump may be constructed at a small expense, as the casting only requires to have the cylinder B bored, which may be readily done, as both ends are exposed. The shell A requires no finishing or after work, it being used in the state in which it was taken from the mold. The caps F G of course require to be adjusted on the ends of the shell; but this is not attended with much expense.

Second. The valves of the compartments are rendered very accessible for adjustment or repairs, and valves and water-passages of ample capacity are obtained, encompassing the cylinder B, so that the latter may be supplied with a requisite quantity of water when the piston is rapidly worked. A short cylinder, therefore, may be used, which renders the pump highly valuable for fire-engines, as a requisite

working capacity is obtained with compactness.

I would remark that although the pump is herein described as being in a horizontal position, it may be used in a vertical or inclined position.

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

The arrangement of the partitions *c c* with the cylinder B, pipes *a b*, and the shell A, in the manner herein shown and described.

REMI HENRY.

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