

J. Edson,
Force Pump.

N^o 13,254.

Patented July 17, 1855.

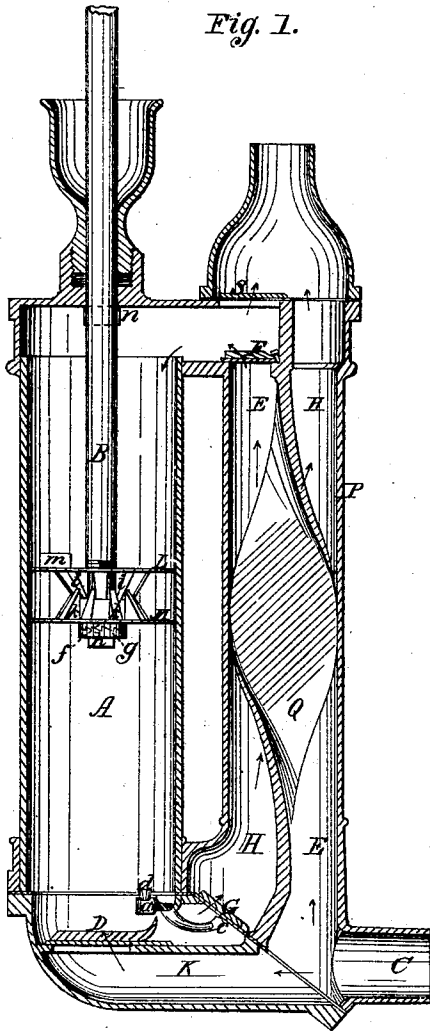


Fig. 3.

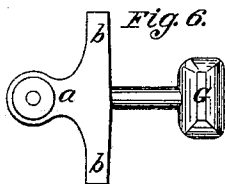
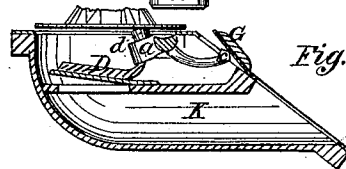
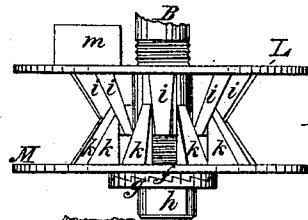
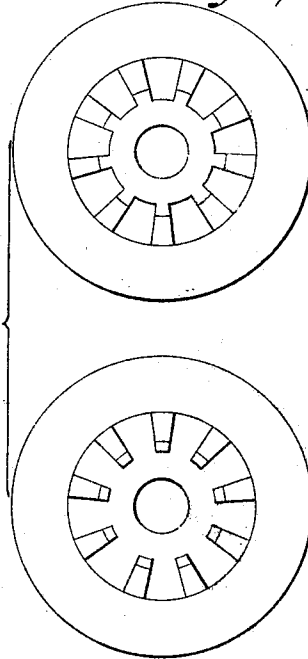
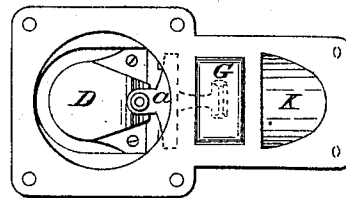


Fig. 5.



UNITED STATES PATENT OFFICE.

JACOB EDSON, OF BOSTON, MASSACHUSETTS.

METHOD OF OPERATING VALVES OF PUMPS.

Specification of Letters Patent No. 13,254, dated July 17, 1855.

To all whom it may concern:

Be it known that I, JACOB EDSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Force-Pumps, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, in which—

Figure 1 is a section through a double acting force pump with my improvements attached; Fig. 2, a view of the piston; Fig. 3, a plan of the upper and lower follower of the piston; Fig. 4, a section of parts shown detached which will be referred to hereafter; Fig. 5, a plan of the lower valve plate; Fig. 6, a plan of the valve tripper detached.

A is the cylinder; B, the piston rod; C, the induction pipe, the water from which passes through the lower induction valve D, to the cylinder beneath the piston, and by way of the twisted passage E, through the upper induction valve F, to the cylinder above the piston. From below the piston it passes through the lower eduction valve G, and twisted passage H, to the air chamber and from above the piston through the upper eduction valve S.

The first part of my invention consists in a peculiar device or tripper for raising the lower induction and eduction valves for the purpose of letting off the water from the cylinder and air chamber. This device seen detached in Fig. 6 vibrates upon the arms *b* in such a manner that when the piston descends to its lowest point the tripper is thrown into the position seen in Fig. 4, its body striking against the cap of the valve D, and its tail *c*, raising the valve G, the cap of the valve D is curved upward as seen in Figs. 1 and 4, that the tripper may strike it in the position most favorable to raise it. For this purpose the latter is pivoted above and a little to the rear of the valve, and is allowed to drop a short distance before it strikes the curved cap D; by this means the tripper acts upon the valve at a much greater leverage than would be the case did it descend vertically upon it.

d is a piece of india rubber inserted in the tripper to receive the blow of the piston.

By the means above described I am enabled to empty the water from the air-cham-

ber and from the water passages K, E and H and induction pipe C, whenever this becomes necessary.

I will now describe the peculiar construction of my piston by the use of which I am enabled to tighten its packing at any moment without removing it from the cylinder.

L is the upper, M the lower follower of the piston; the latter revolves freely upon the piston rod B, and has upon its under surface ratchet teeth *f* which engage with corresponding ratchet teeth *g*, attached to the nut *h*, which is screwed upon the end of the piston rod; the latter is thus allowed to turn in one direction within the follower M but not in the other.

k are fingers which rise from the follower M, and interlock with corresponding fingers *i*, which project down from the follower L. These two followers though permitted to move in a longitudinal direction independent of each other, are compelled to revolve together. The piston rod B, is tapped into the follower L, so that as the rod is turned the followers are made to approach each other; they are prevented from being separated (when the piston is packed) by the ratchet teeth *f*, *g*. The packing is wound upon the fingers *i*, *k*, until it reaches the periphery of the followers and is tightened by causing the latter to approach each other. When it becomes necessary to tighten the packing without removing the piston from the cylinder, the piston is raised to its highest point, when the stop *m*, strikes against the stationary stop *n*, seen in dotted lines in Fig. 1 by which means the revolution of the piston is prevented; the piston rod is then turned and the packing is tightened as required, the ratchet teeth *f*, *g*, preventing the packing from being loosened either by accident or design.

In order that the cylinder P may be made to accommodate the induction passage E, and the eduction passage H, it is divided by the partition Q into two separate chambers and that the water which is received upon one side of the cylinder P may be delivered upon the opposite side; this partition is twisted as seen in Fig. 1, thereby forming two twisted passages each delivering its water upon the opposite side from that on which it received it.

I do not claim a tripper for the purpose of opening the valves by the descent of the

piston, as such have been used before,
but

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

- 5 1. The peculiarly formed tripper herein
described, in combination with the curved
cap of the valve D by which means a single
tripper is made to open both valves in the
manner herein set forth.

2. I claim the twisted partition Q, for 10
the purpose herein set forth, whereby the
cylinder is divided into two water passages
which deliver the water upon the opposite
side from that on which they receive it.

JACOB EDSON.

Witnesses:

SAM. COOPER,
JOHN S. CLOW.