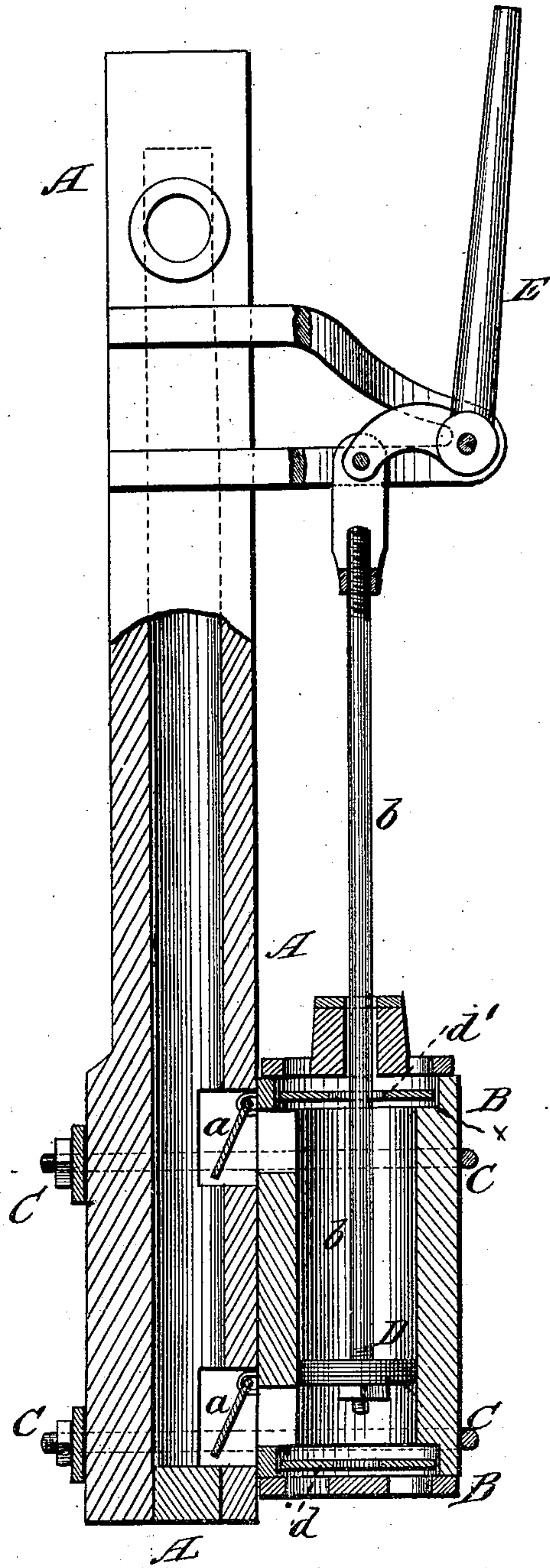


O. W. GROVER.

FORCE-PUMP.

No. 184,613.

Patented Nov. 21, 1876.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

ORVIS W. GROVER, OF MIDDLEBURY, VERMONT.

## IMPROVEMENT IN FORCE-PUMPS.

Specification forming part of Letters Patent No. **184,613**, dated November 21, 1876; application filed December 10, 1875.

*To all whom it may concern:*

Be it known that I, ORVIS W. GROVER, of Middlebury, in the county of Addison and State of Vermont, have invented certain new and useful Improvements in Force-Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The main object of my invention is to so arrange the parts of a force pump that a continuous stream of water may be thrown by actuating its handle, without the employment of an air-chamber to establish a continuous equable stream; and to this end the nature of my invention consists in the construction of parts, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which the figure is a longitudinal section of my pump.

A represents the pump-stock, to the side of which, at the lower end, is attached the pump-cylinder B, by means of clamps C C. The cylinder B communicates at or near both ends with the interior of the pump-stock by valves *a a*, which open inward into the stock. D is the piston within the cylinder B, connected by a rod, *b*, with the operating-handle E, said rod being either somewhat elastic or yielding, or, if rigid, provided with a joint, so as to in

either case conform to the curve of the motion of the inner end of the handle, to which it is attached. The pump-cylinder B is intended to be entirely submerged, and the ends thereof are provided with inwardly-opening valves *d d'*, the top valve *d'* loosely surrounding the rod *b* and moving up and down on the same, its downward motion being arrested by a seat, *x*. It will be seen that the water is supplied on both sides of the piston, and when the pump is in operation a steady continuous stream of water is thrown out of the pump-stock.

The construction of the pump admits of getting to the valves for repairs by simply loosening the clamps C C; and the pump is strong and durable, and not liable to get out of order.

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

The combination with the main pump-stock A of a cylinder, B, open at both ends, and provided near the top with a valve-seat, *x*, the valve *d'* loosely surrounding and moving up and down on the rod *b*, the piston D, and valves *a a d*, all constructed substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

ORVIS W. GROVER.

Witnesses:

RUFUS WAINWRIGHT,  
SOLOMON LAPINE.