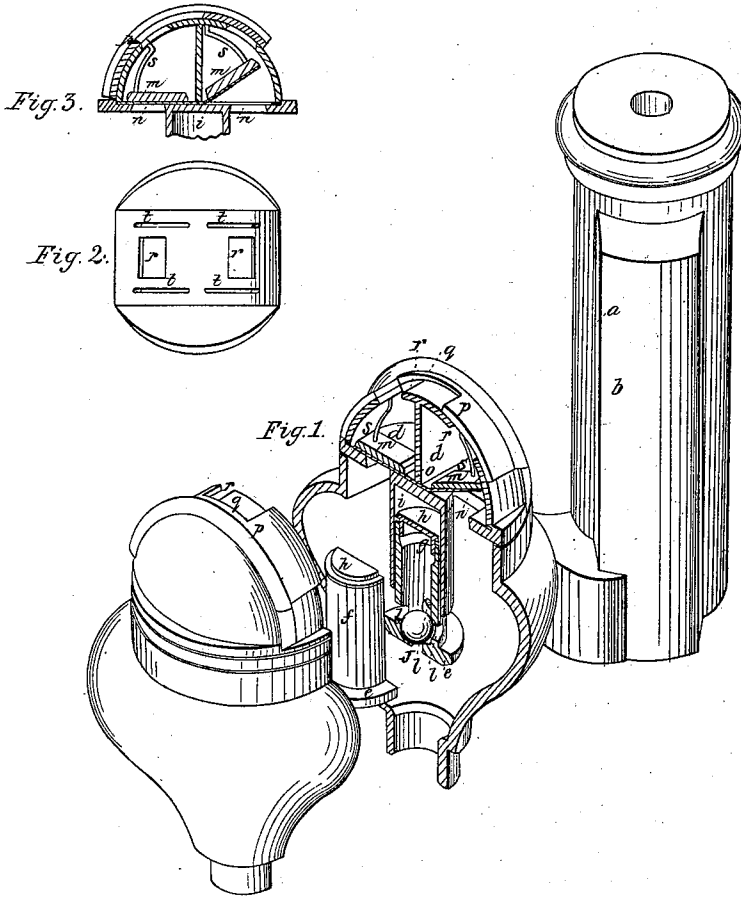


*J. R. Bassett,*  
*Pump Valve.*

*No 10,318.*

*Patented Dec. 13, 1853.*



# UNITED STATES PATENT OFFICE.

JOEL R. BASSETT, OF CINCINNATI, OHIO, ASSIGNOR TO JAS. B. WILLIAMS.

## PUMP-VALVE.

Specification of Letters Patent No. 10,318, dated December 13, 1853.

*To all whom it may concern:*

Be it known that I, JOEL R. BASSETT, of Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Valves for Pumps; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification.

The objects of my improvements are, 1st, an arrangement by which the advantages of a pneumatic cushion, check-valve and starting-valve, are combined in one mechanism. 2d, to provide for the discharge openings of a double-acting pump,—a slide valve, common to both; moving simultaneously with and actuated by the supply valves.

In the accompanying drawings Figure 1 is a perspective view, the valve box being separated by a vertical section. Fig. 2 is a top view of the slide valve seat. Fig. 3 is a vertical section showing the valve movements.

(*a*) is the cylinder; (*b*), the side pipe; (*c*), the water passages, communicating in the usual way with the supply valve chambers (*d d'*), one directly with the bottom of the cylinder, and the other through the side pipe with the top of the cylinder.

(*e, f, g, h*) is a puppet valve serving the purpose of a check valve, and consisting of a valve disk (*e*), having a hollow cylindrical stem or shank (*f*), with a leather gasket (*g*), secured in its top by a screw cap (*h*), so as to make between the valve and its cylindrical chamber (*i*), a perfectly air tight joint; but which shall also permit the free play of the valve up and down within the chamber. The space in the chamber above the valve, is intended to inclose a body of air of the ordinary atmospheric density, when the valve is on its seat. At the center of the disk of this puppet-valve, is a small aperture (*j*), occupied by a ball-valve (*k*). The sides of the chamber also, at their lower part, are pierced by small apertures (*l*), to afford egress to the water. The object of this device, is to set in motion an ascending current of water, that by its impetus shall expedite the opening of the check valve. As soon as the check valve is open, it acts forthwith as a means of modulating any irregularities in the current; and counteracts any sudden jar or intermittent action, the valve (*e, f, g, h*), acting as a piston to the volume of air in the chamber, so as to transmit its resilient influence to the water, without per-

mitting any escape of the air or access of water to the pneumatic chamber.

(*m, m'*) are the two supply-valves, and (*n, n'*) are their openings. These valves are of the kind commonly called clack valves, and have their center of vibration near to the central partition (*o*), which separates from each other the two supply-valve chambers (*d, d'*), the leather hinge on which these valves vibrate, also serving as a gasket.

The roofs of the chambers (*d, d'*), form collectively a semicylindrical seat for a slide valve (*p, q*) which being slid to and fro upon the seat, brings its opening (*q*) alternately over one of the other discharge openings (*r, r*) in the top of the supply chamber. The motion of this slide valve is obtained in a very peculiar way, being derived from either supply valve alternately, in manner following.

(*s, s*) are two of four prongs, which projecting from the under side of the slide-valve, through slots (*t*) into the supply-valve chambers, are there either made fast to, or simply impinge against the top of the supply-valves; so that each valve as it rises, impels the slide valve in the direction to close its respective discharge opening, and to open the other: this communication of motion is readily effected, inasmuch as there is only the inertia of the slide valve to overcome; the lower or clack-valve moving concentric or nearly so, with the path of the slide valve.

The operation of my pump is as follows: The piston being at the top of the cylinder, and the latter being already primed with water, and all the valves resting on their seats, let now the piston be depressed; a tendency to the vacuum will be thereby created in the upper part of the cylinder and consequently the water above the supply valve connecting therewith (the open one in the drawing) rushing to supply the void, removes the hydrostatic pressure from the top of the said valve, which, opening, and pressing upward against the prongs of the slide valve, the latter is thereby pushed over to the reverse position, so as to close the discharge port or aperture immediately above the now open supply valve and to open the other port. At the same time the upward draft of water, raises the small starting valve (*k*) and an upward current being thereby established its impetus and friction against the check-valve, instantly

effects its elevation, and it continues to rise, until the resilience of the compressed body of air in the pneumatic cushion above the check valve, counterbalances the hydraulic force. The check valve being once raised, continues elevated so long as the piston is in action, merely oscillating gently up and down, as the pressure varies, so as to tend to equalize the action of the water and prevent any sudden jars. While the above movements have taken place, the contents of the cylinder below the piston, have been discharged through the open port on the other side. On the ascent of the piston, of course all these actions are reversed, except that the check valve instead of closing, merely dips a little way into the supply chamber at each change of stroke.

The utility of the check valve is twofold. It insures the priming of the pump by keeping it full of water, in case the other valves,—from their much more rapid wear—become leaky; and it also isolates the air cushion so as to prevent its diminishment by contact with the flowing water. The advantages of the cylindrical slide valve, although of a simply economical and practical character, are of material importance in so staple an article as a pump. Besides sharing in common with all constructed slide valves—the advantages of permanency, and

ease of operation, it also presents facilities for its wearing surfaces being finished by the turning lathe. This cylindrical form is necessitated by my peculiar method of working the discharge valve by means of each supply valve alternately, and requiring for the easy working of the former, that it should be as nearly as possible concentric with the axes of vibration of the latter.

I claim as new, and of my invention, and desire to secure by Letters Patent:

1. The construction—as described of the puppet check-valve, serving also as the piston of a pneumatic spring, and provided at its lower end with a small starting valve, substantially in the manner and for the objects explained.

2. The segmental cylindric slide-valve of the discharge openings, having prongs as described connecting it with the clack valves upon the supply openings, so that the motion of the supply-valves shall be communicated to the discharge-valve as herein explained.

In testimony whereof, I have hereunto set my hand before two subscribing witnesses.

J. R. BASSETT.

Witnesses:

GEO H. KNIGHT,  
F. H. RÄWEKAMP.