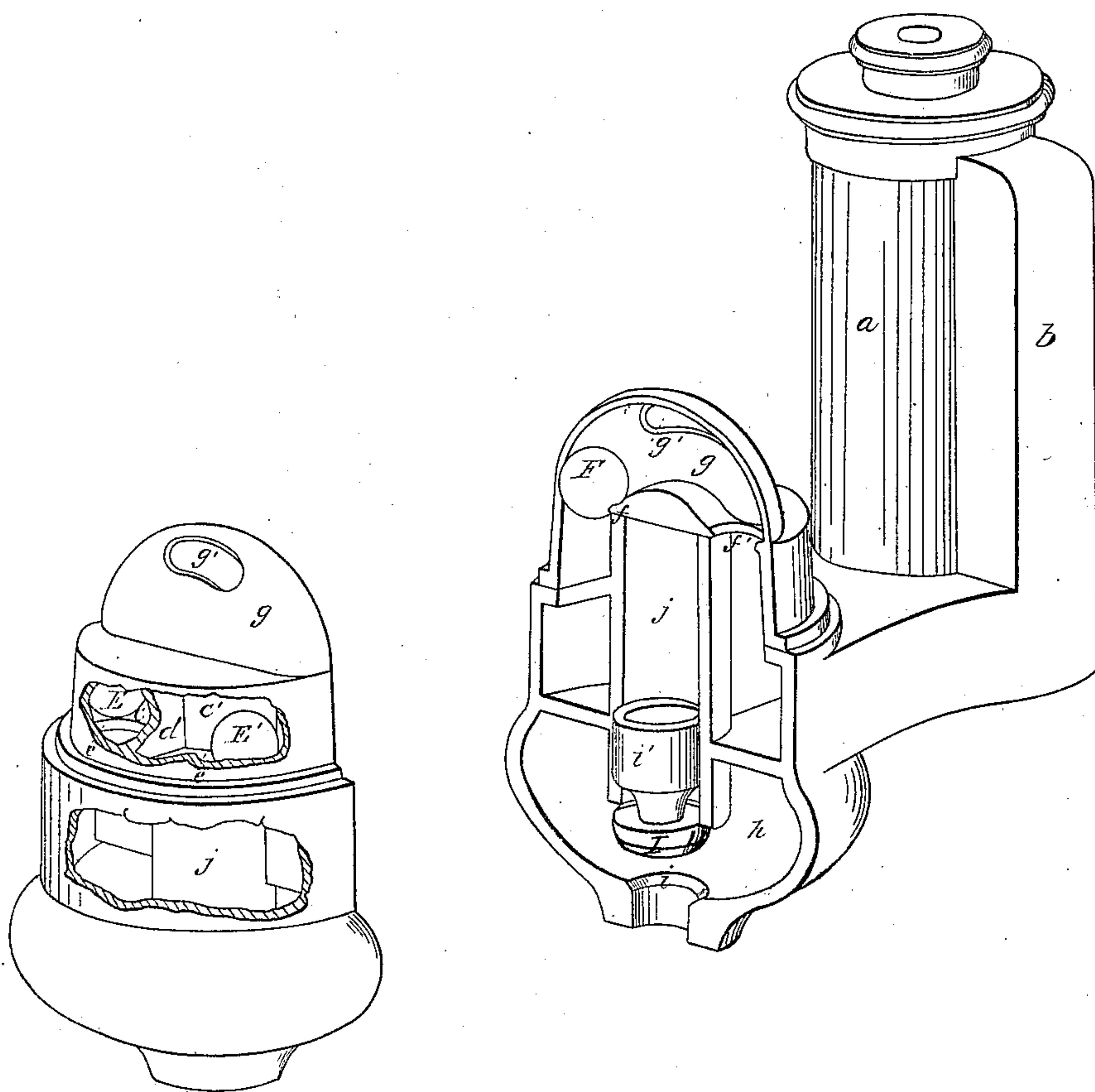


*J. R. Bassett*  
*Pump Valve,*  
*Nº 10,537,* *Patented Feb. 14, 1854.*





# UNITED STATES PATENT OFFICE.

JOEL R. BASSETT, OF CINCINNATI, OHIO, ASSIGNOR TO C. H. WILLIAMS.

## BALL-VALVE FOR PUMPS.

Specification of Letters Patent No. 10,537, dated February 14, 1854.

*To all whom it may concern:*

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

The increasing preference for metallic valves over those of leather, and the very general adoption of the former, have given rise to a great variety of contrivances having this object in view. Among these, those known as ball valves, have several well known and valuable advantages, such as their equable wear, their simplicity, their permanence, non-liability to clog, and almost total exemption from friction.

It is my aim in this invention to extend the peculiar advantages of a rolling valve, by enabling a single ball valve to serve two openings; and for this purpose I have devised such a construction of the containing passages, as shall insure the occupancy of one or other opening while the valve is at rest.

It may be proper here to premise that I am aware of the existence of a ball valve which serves two openings in the connecting pipes of tanks, boilers, &c., but beyond this double action of the valve, the analogy ceases; in my pump, both the object to be attained and the construction to accomplish that object being radically different, and in some respects diametrically the opposite of the cases cited, in which the object being to preserve an equilibrium in the several tanks thus connected, there is under all ordinary circumstances, a free communication through both openings at the same time, and the construction therefore in these is or should be such that the gravity of the valve will tend to hold it to an intermediate position between the openings, and when in consequence of the careening of the vessel, the valve drops onto the lower opening the flow of water ceases altogether.

For my purpose the valve must occupy one or other opening except at the instant of reversal, and cannot be allowed to remain at any intermediate point, and change of position is only made from one opening to the other, and when made diverts but does not stop the flow of water.

In the accompanying drawing my im-

proved pump is represented in perspective, with a section removed to one side, and a part of the exterior broken away so as to expose the interior arrangement.

(a) is the cylinder and (b) the side pipe of a double-acting pump have the usual passages.

The two discharge chambers (c c') are separated by a partition (d), one chamber communicating directly with the bottom of the pump cylinder, and the other, through the side pipe, with the top of the cylinder.

(E, E') are the two supply valves, and (e e') are their seats. One discharge valve (F) serves for two discharge openings (f, f'), communicating respectively with the chamber (c, c'). All these valves just enumerated are of metal and are spherical in form.

The valve F traverses back and forth in a semi-annular chamber (g), occupying alternately one of the two openings (f f'), as the water flows from the chamber (c) or chamber (c') in its passage from the pump. The discharge water passes from the semi-annular chamber (g) through the opening (g') into the air vessel, which covers and surrounds the chamber (g).

Immediately below the discharge chamber (c c') is a space (h) which I call the supply chamber; at the bottom of this chamber where it communicates with the supply pipe is the valve seat (i) of a puppet valve I, the stem of which terminates in a head (i') which is fitted to work smoothly in a cylindrical air chamber (j) being either ground in or packed, so as to confine the air contained in the chamber above the valve, when the latter is raised.

When the pump is in ordinary motion, the valve (I) has not time to drop on to its seat but remains suspended by the rising column of water, but as soon as the current ceases, the valve drops to its place and prevents the return of water to the supply pipe. The purpose of this arrangement is twofold. In the first place, the valve (I) acts as a check valve to retain the contents of the chamber (h) which are by it prevented from flowing back, and secondly during the operation of the pump, by affording an elastic force inside of the chamber, it prevents the concussion arising from the rapid manipulation of the pump. This effect is but poorly attained by an ordinary air chamber inasmuch as



when exposed to the water the air is gradually carried off and the chamber becomes flooded with water.

5 The valve (F) moves in a semiannular track or chamber (g) over an intervening or dividing ridge, situated between the openings (f f') and which in conjunction with the sides and top of the semiannular chamber, forms a guide for the valve, and insures  
10 its occupancy of one or other of the valve seats at all times except when in the act of passing from one to the other, as it is alternately acted upon by the discharge water, from one or the other end of the pump cylinder flowing through openings (f or f').  
15 The dividing ridge between the openings (f, f') follows the curve of the annular chamber, and prevents the ball valve from lodging at any intermediate point, and insures the occupancy by the valve of one or  
20 other of the seats (f f') during the inaction of the pump and at all other times, with the exception of the instant required to traverse the intervening ridge at the commencement of each upward or downward stroke of  
25 the pump piston. In this respect the opera-

tion of my ball valve, differs from that of others used in the connecting pipes of steam boilers, and whose position when in equilibrium is out of contact with the openings. 30  
The dividing ridge here spoken of, besides its use for guiding the ball on to its seat, serves as a guard to prevent its displacement by the disturbing action of the current of water. 35

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

The method of aiding and insuring the operation of the ball valve F by means of an intervening or dividing ridge, placed between the openings (f f') and forming part 40 of the semiannular chamber (g) as described and represented, by which the valve is made to seek and occupy its appropriate seat, when acted on by the discharge water in one or the 45 other direction.

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

J. R. BASSETT.

Witnesses:

GEO. H. KNIGHT,  
F. H. NÖWEKAMP.