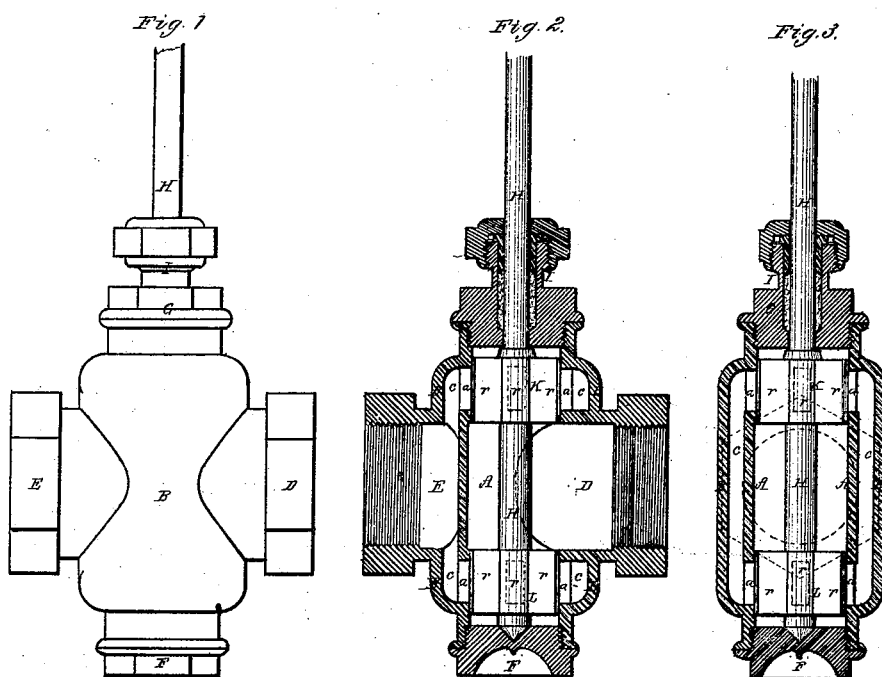


*R. Berryman,*

*Stop Cock.*

*No. 109,796.*

*Patented Dec. 6. 1870.*



Witnesses.

S. H. Piper  
L. N. Hadden

Rob't. Berryman.

by his attorney.  
W. H. Hadden

# United States Patent Office.

ROBERT BERRYMAN, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 109,796, dated December 6, 1870.

## IMPROVEMENT IN VALVE-COCKS.

The Schedule referred to in these Letters Patent and making part of the same.

*To all persons to whom these presents may come:*

Be it known that I, ROBERT BERRYMAN, late of Philadelphia, of the State of Pennsylvania, but now of Boston, of the county of Suffolk and State of Massachusetts, have invented a new and useful Balanced Duplex Valve-Cock for hydraulic or pneumatic purposes; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing making part thereof, and of which—

Figure 1 denotes a side elevation,  
Figure 2 a longitudinal section, and  
Figure 3 a transverse section of it.

In this cock the valve-seat is a tube, A, extended from end to end of an encompassing case, B, between which and the seat-tube is a chamber or space, C, extending around the latter.

An induction-tube or conduit, D, leads through one side of the case B into the valve-seat tube A, the case B on its opposite side being furnished with an ejection-passageway, E.

The case also has openings at its opposite ends, into one of which a cap, F, is screwed.

A cap, G, also screws into the other opening, and serves to support the valve-spindle H, which extends through the said cap G and a stuffing-box I fixed thereto.

To the inner end of this spindle is fixed a valve, K, which is connected with another such valve, L, by the spindle H, extended from the inner edge of one to that of the other of the said valves. Each of the said valves is composed of a series of arms, *r r r r*, projecting radially from the spindle, and formed in manner as shown.

Through the sides of each valve-seat tube are two series of ports or passages, *a a a a*, to operate with the valves, each passage being rectangular in shape.

Furthermore, it will be seen that the valve-spindle is pivoted to the cap F at its inner end.

By turning the two valves, by means of their stem or spindle, or power applied thereto, they may be caused to either wholly or partially open the ports of the seat-tube, as occasion may require.

If, now, we suppose water under pressure or head to be introduced into the seat-tube by the conduit D,

it will press against the two valves and cause one to practically counterbalance the other. Were they not connected each would be forced endwise against the next adjacent head or cap of the case, and, of course, while being revolved, friction due to the pressure would be created between the cap and the valve-head.

By combining two valves together and arranging them in a seat-tube in manner as described, not only do we attain counterbalancing of each valve in opposite radial directions, but one valve will operate to balance the other in longitudinal or axial directions, the whole forming a very perfect "balanced valve apparatus or cock."

The water or steam may enter through either of the passages D E and escape by the other.

By having the two valves they will need to travel but about half the distance that would be required of a single one to deliver a like amount of water or steam, and they will operate with very little friction, whatever may be the amount of pressure to which they may be subjected.

The duplex valve-cock has other advantages, it being readily attachable to either vertical or horizontal pipes.

I would remark that sometimes I make the valves and their seats with a common taper; or, in other words, the valve-chamber slightly conical, the valves being also made in compliance therewith.

The valve-spindle may also have a stuffing-box at each end of the valve-case, both of the bores being alike, and the parts of the spindle included within them having equal diameters. This renders the apparatus what is termed a complete balanced valve.

I claim—

The arrangement and combination of the two connected valves, K L, with the spindle, the seat-tube, and the case B, provided with the induction and ejection-passages D E, the whole being constructed, and the valve and seat-tube being furnished, with ports or passages *a*, as hereinbefore explained.

ROBERT BERRYMAN.

Witnesses:

R. H. EDDY,  
J. R. SNOW.