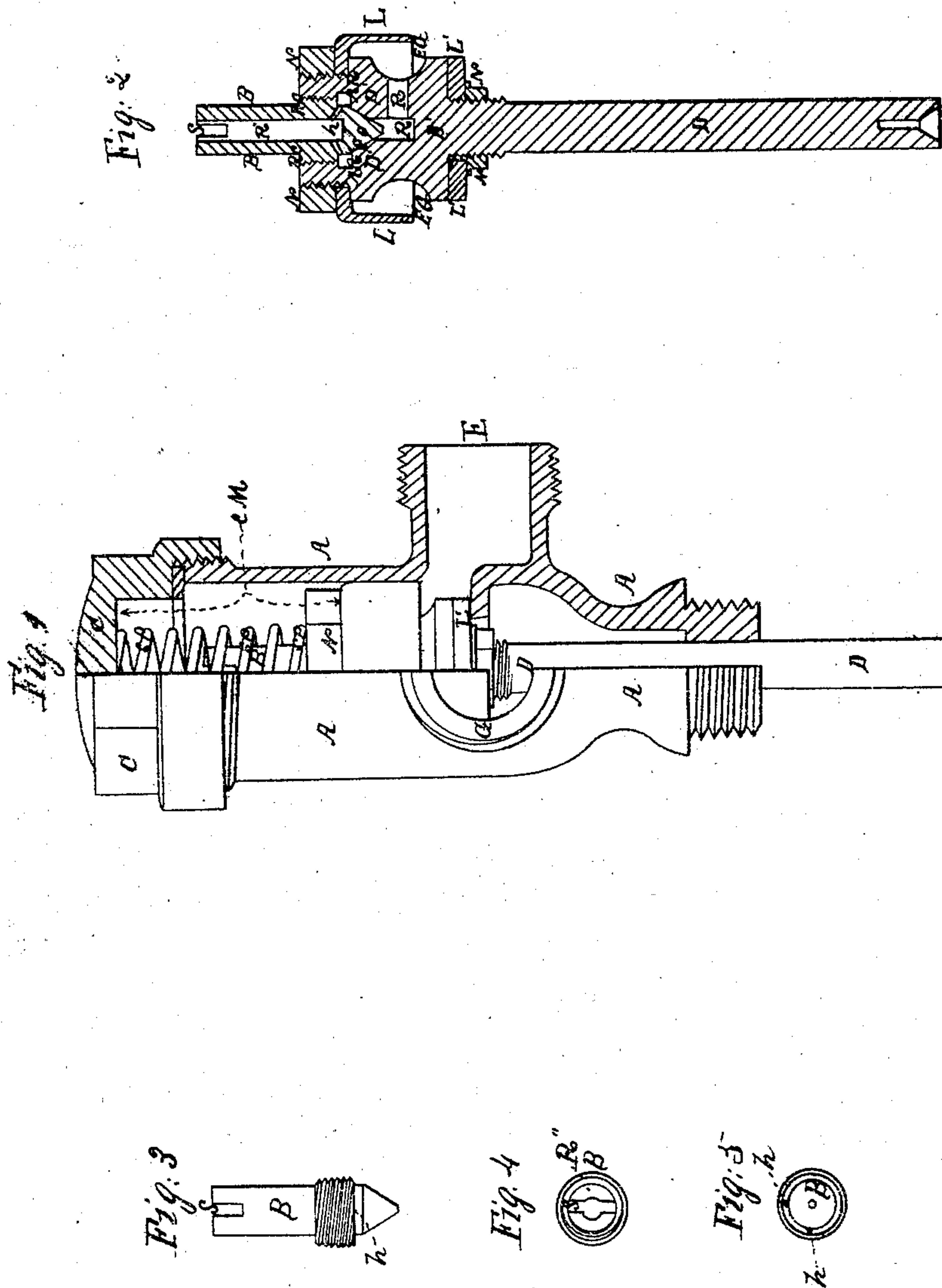


*W. S. Cooper.*  
*Water-Closet-Valves.*

*No 74,896.*

*Patented Feb. 25. 1868.*



WITNESSES

*James L. Espinosa*  
*J. H. Bond*

INVENTOR

*W. S. Cooper*  
*per his attorney*  
*J. H. Bond*

# United States Patent Office.

WILLIAM S. COOPER, OF PHILADELPHIA, PENNSYLVANIA.

*Letters Patent No. 74,896, dated February 25, 1868.*

## IMPROVEMENT IN VALVES FOR WATER-CLOSETS.

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

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM S. COOPER, of the city of Philadelphia, in the county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Valves for Water-Closets; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an elevation view, half sectional, so as to show the inside arrangement of my valve.

Figure 2 is a sectional elevation of the valve and its stem and diverse details on the same.

Figure 3 shows an elevation view of the stop-cock for the chamber C M.

Figure 4 is a top view of the same.

Figure 5, a bottom view of the same.

The nature of my invention consists in providing water-closets with a valve of a peculiar construction, and which will allow the water to flow into the basin freely when the valve is open, said valve closing slowly, and only by degrees, so that the water be allowed to pass and flow a certain length of time after the pressure on the stem of the valve has ceased.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

A is the body of the valve. D, the stem of said valve. L', a leather or India-rubber packing or washer, resting on the seat of the valve when closed, and held in proper place by nut n'. On top of valve D' is set a piece, L, of leather or India-rubber packing, as shown in figs. 1 and 2, its lower edge E G being thinned, for the purpose hereinafter shown. Said packing L' is held in proper place by nut N, and its diameter is that of the inside of the body A of the valve. The valve itself is of a smaller diameter, so that between the outside of said valve D' and the inside of L there is an annular space, as shown in fig. 2. On the centre of the top of the head of valve D' is cut a circular recess of about one-quarter of an inch diameter and depth, bearing on its inside face a female thread, into which is screwed piece B. The bottom of said recess is cut conical, as shown in fig. 2, and between the lower end of the said female thread and the base of conical recess C O there is a small annular recess, A R. The conical bottom C O communicates by means of hole R' with hole R, bored (R' and R) at right angles into centre and side of D', as shown in fig. 2. Piece B is made hollow in R'', and R'' communicates with annular space A R by means of two, three, or more holes, h h h, figs. 2, 3, 4, and 5. The lower end of B is made conical, to fit in conical recess C O.

Valve D' being prepared as aforesaid, is inserted into body A, (fig. 1,) and I place spring S P on top of D', and so that piece B runs up through it. Said spring being pressed down by cap C, screwed on head of A, will keep the valve close against its seat. E being the induction-pipe, and G the discharge one, my valve being set in proper position into a water-closet, can be used either as a hopper-cork or attached to a pan-closet. The whole pressure of the water coming up through induction-pipe E, bears constantly all around head D' and inside leather L, the edges E G of which leather packing L are thereby spread and pressed against the inside face of A, so that L becomes a water-tight packing, allowing no water to pass up between itself and A. There is a space, which I will call chamber C M, between the cap C and the top (fig. 1) of leather packing L. The water under L reaches, by its own pressure, the said chamber C M through holes R R', h h h, and R''; and as if piece B were screwed tight on to D', there would be no communication between chamber C M and the water under L, the more or less quantity of water admitted as aforesaid in chamber C M can be regulated by screwing B on D' more or less tight. Now, when I press on stem D and open valve D', the water in chamber C M will be somewhat compressed, its said compression will overbalance the pressure under L, the edge E G of L will therefore cease to be compressed against sides of A, and the water in chamber C M will be able to discharge itself between L and A. It is obvious that the pressure on top of L in chamber C M, will tend to close the valve as soon as the pressure on stem D will have ceased to act, therefore the greater or lesser quantity of water admitted through holes R R', h h h, and R'' into chamber C M, will regulate the greater or lesser speed of the closing of valve D'. The movement depends, therefore, entirely on piece B, which should be screwed on D' more or less tight, according to the greater or lesser quantity of water one desires to admit into the basin after the pressure on stem D has ceased.



I do not pretend having invented the regulating-chamber, by means of which I obtain the intended effect of allowing the water to flow for awhile after the pressure on the stem of the valve has been withdrawn. I am aware that the principle is known and already used. But the construction of my valve differs in many essential points from any of those now in use; and

What I do claim as my invention, and desire to secure by Letters Patent of the United States, as a new article of manufacture, is—

A water-closet-valve, comprising hollow piece B, annular space A R, and holes R' and R, and h h, all constructed and operated in the manner and for the purpose above set forth and described.

WM. S. COOPER.

Witnesses:

LIONEL D'EPINEUIL,  
J. H. BOWDEN.