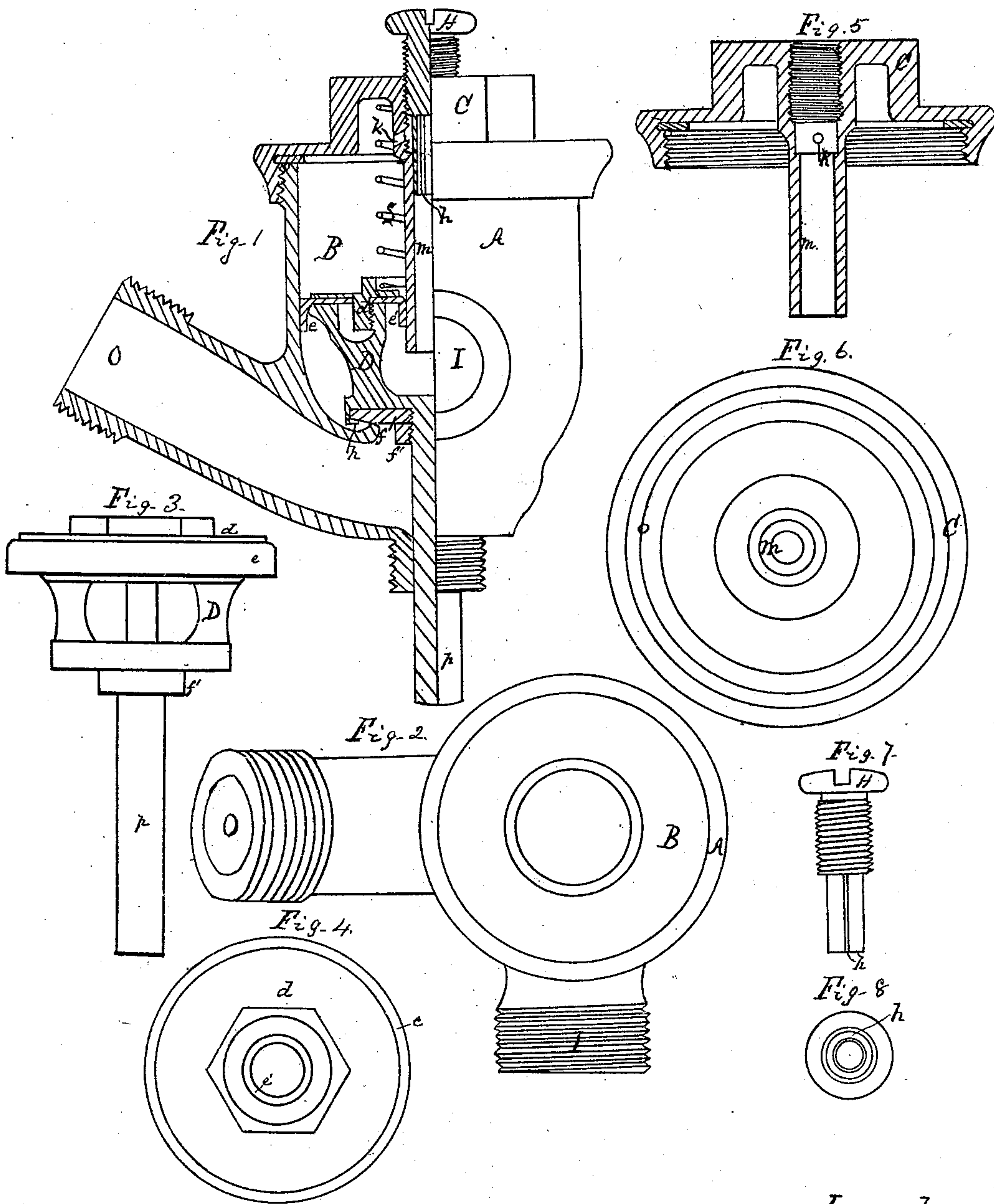


W. S. COOPER.
WATER CLOSET VALVE.

No. 75,374.

Patented Mar. 10, 1868.



Witnesses.
Owen Jones
A. B. Beamish

Inventor.
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WILLIAM S. COOPER, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 75,374, dated March 10, 1868.

IMPROVEMENT IN WATER-CLOSET VALVES.

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 Philadelphia, Pennsylvania, have invented an Improvement in Water-Closet Valves; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

The object of my invention is to provide a valve or cock, which can be regulated to supply any required amount of water to a water-closet, and of which the regulating-apparatus can be operated by any person without unscrewing any of its parts or shutting off the supply of water, so that when the pressure is great and the flow abundant, it may close rapidly, thereby avoiding any waste of water, and when the pressure is light and the flow sluggish, the time of closing may be so lengthened as to insure an ample supply of water to keep the closet clean and wholesome.

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

On referring to the accompanying drawing, which forms a part of these specification, we see—

Figure 1 an elevation of the whole valve, one part being in section, to show the internal arrangement of its parts.

Figure 2 is a plan of the body.

Figure 3 is an elevation of the plunger, and

Figure 4 is a plan of the same.

Figure 5 is an elevation in section of the cap, and

Figure 6 is an under view of the same.

Figure 7 is an elevation of the regulating-screw, and

Figure 8 is an under view of the same.

Construction.

On referring to fig. 1, we see the body, A, with its cylindrical chamber, B, and having an inlet, I, and outlet, O, for the passage of water. D is the plunger, with its shaft *p*, as represented, while *e* and *e'* are cup-leathers, held in position, as represented, by the jam-nut *d*. The valve *f* is of some elastic material, as rubber or leather, and held in position on the shaft *p* by the nut *f'*. The recessed flange *n* is for the purpose of holding securely in position the edges of the soft packing of the valve to prevent their fraying or being rolled over. The cap C is seen in section in fig. 5, with its central hollow stem *m*. At the upper end of this stem is an enlarged chamber, with water-passages *k*, and having a thread cut within it to receive the regulating-screw. The joint between the cap C and the body A is made water-tight by a packing, as shown at *o*. The hollow stem *m* not only affords a water-passage to the chamber B, but also acts as a central guide to the plunger D, and as a support to the spiral spring S. The spiral spring S is placed between the cap C and the plunger D for the purpose of closing the valve. The regulating-screw, as shown at figs. 7 and 8, is made with a hollow shank, *r*, having cut in it a small slot, *h*. The hollow shank *r* of the screw fits nearly water-tight in the smaller part of the hollow stem *m* of the cap C.

Operation.

The cup-leathers *e* and *e'* are made very flexible and to fit easy, so that when pressure is applied to the bottom of the shaft *p* of the plunger D, said plunger is forced upward, and the cup-leather *e* is compressed, and *e'* is expanded to admit of the easy escape of the water from the chamber B. The pressure being relieved from the shaft *p* of the plunger D, the said plunger is started to its seat by the action of the spring S; and in the descent of the plunger D the cup-leather *e* is expanded, while *e'* is compressed, by the pressure of the water below them to close their respective water-ways. These water-ways being closed, the chamber B can only be filled and the valve returned to its seat by water passing up the hollow stem *m* of the cap C and passing through the slot *h* of the regulating-screw H and the water-ways *k* in the hollow stem *m* of the cap C. The time of filling the chamber B, and consequently the duration of the flow of water ere the valve is closed, is regulated by the greater or less opening through the slot *h*, which is obtained by the withdrawing or inserting of the hollow shank *r* of the screw H in the hollow stem *m* of the cap C through the medium of the screw H.

I do not propose to confine myself to the peculiar form and position of the regulating-screw H, as described, but may employ a screw having a solid shank with a flattened side to make a passage for the water to the chamber B. I am well aware that water-closet valves have been made with a variable chamber, operated and controlled in various ways; and I am also well aware that regulating-screws have been used.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The valve D, constructed as described, and provided with the cup-leathers *e* and *e'*, substantially as specified.
2. The fixed hollow central stem *m* of the cap C, with the water-passages *k*, in combination with the valve D and chamber B, substantially as set forth.
3. The combination of the regulating-screw H, fixed central stem *m* of the cap C, passages *k*, and chamber B, substantially as described and for the purpose specified.

WM. S. COOPER.

Witnesses:

OWEN JONES,
A. B. BEAMISH.