(No Model.)

T. McHUGH.

WATER CLOSET VALVE.

No. 280,648. Patented July 3, 1883.

Fig. 1.

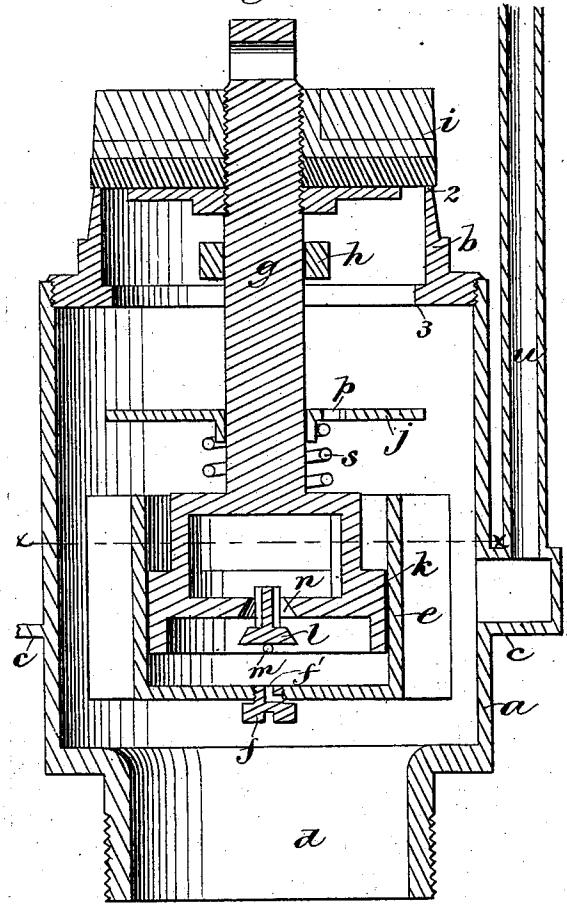


Fig. 2.

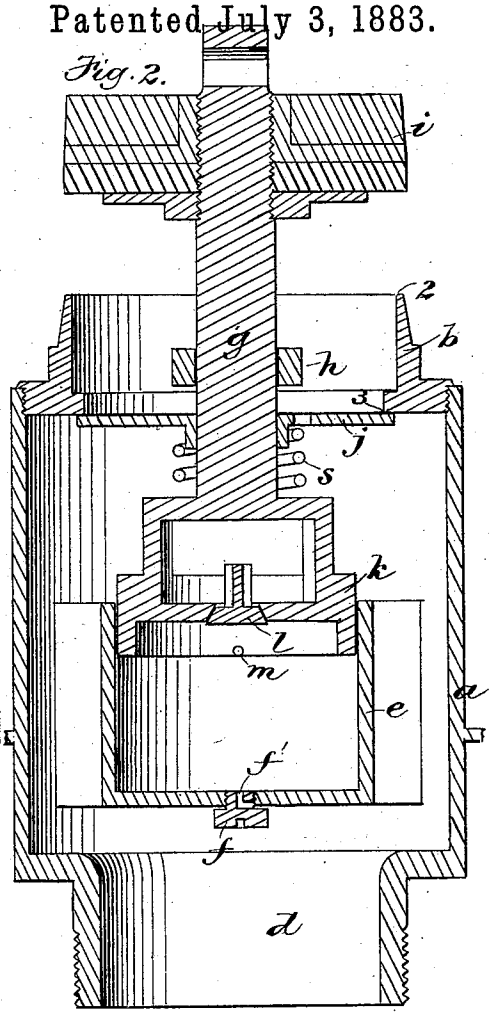
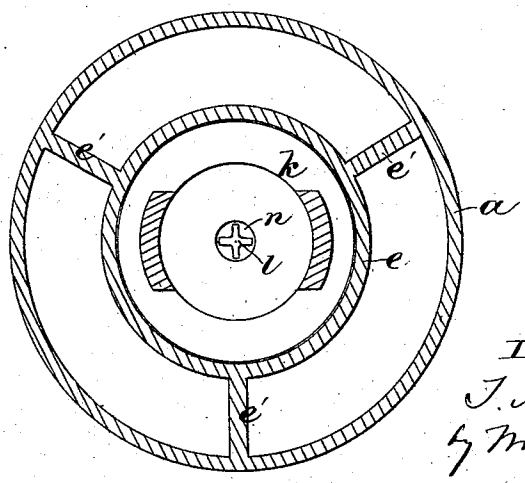


Fig. 3.



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by Wright Brown
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UNITED STATES PATENT OFFICE.

TIMOTHY McHUGH, OF CAMBRIDGE, ASSIGNOR TO HIMSELF, AND WARD & CURLEY, OF BOSTON, MASSACHUSETTS.

WATER-CLOSET VALVE.

SPECIFICATION forming part of Letters Patent No. 280,648, dated July 3, 1883.

Application filed February 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, TIMOTHY McHUGH, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Water-Closet Valves, of which the following is a specification.

This invention relates to that class of water-closet valves which are operated automatically by a connection with the closet seat or door, and in which the first action caused by the depression of the closet-seat or the opening of the door is a brief opening of the passage through the valve to cause a brief flow of water called the "first wash," then a closing of said passage until the closet-seat is released or the door again opened, when the passage is again opened and water is allowed to flow for a longer period, the passage being finally closed automatically.

My invention has for its object to provide a simple, durable, and efficient valve of this class; and to this end it consists in the improvements which I will now proceed to describe.

Of the accompanying drawings, forming a part of this specification, Figures 1 and 2 represent vertical central sections of my improved valve, showing the same in different parts of the operations. Fig. 3 represents a section on line *x x*, Fig. 1.

In the drawings, *a* represents the cylindrical casing of my improved valve, the same having a ring, *b*, at its upper end, an external flange or shoulder, *c*, adapted to rest on the bottom of the tank, in which the valve is placed, and a threaded neck, *d*, at its lower end adapted to be coupled to a pipe which conducts water to the bowl or hopper of the closet. The upper edge of the ring *b* constitutes a valve-seat, 2, and its lower edge a valve-seat, 3, and when both of said seats are uncovered a clear passage exists through the casing, through which water can flow downwardly through the casing, the water entering at the upper end of the ring *b* and escaping through the neck *d*. Within the casing *a*, and rigidly attached thereto by arms *e'*, is a cylindrical cup or chamber, *e*, open at its top, and provided with a bottom, which has an adjustable screw, *f*, having a water chamber or vent, *f'*, which can be opened or closed by turning said screw in or out.

g represents a valve stem or rod adapted to slide vertically in a guide, *h*, attached to the ring *b*, and provided above said ring with a weighted valve, *i*, adapted to rest on the seat 2, and below said ring with a valve, *j*, adapted to bear against the seat 3 when said stem is raised.

At the lower end of the stem *g* is a piston, *k*, fitting somewhat closely the interior of the chamber *e*.

In the center of the piston *k* is an opening, *n*.

l represents a valve, which bears against the opening *n* from the under side of the valve and closes the same when the piston is moving downwardly against a body of water in the chamber *e*. When the piston is at rest in the depressed position shown in Fig. 1, the valve *l* drops by its own weight upon a support, *m*, and leaves the opening *n* uncovered.

u represents an overflow-pipe extending from the lower part of the casing *a* to a suitable elevated point in the tank.

The operation is as follows: The valve-stem *g* is connected by any suitable means with a part of the closet—for example, the seat thereof—so that when the seat is depressed by the weight of a sitter the stem will be raised from its normal position shown in Fig. 1 to the position shown in Fig. 2. By this movement the valve *i* is raised from its seat, and water is allowed to flow through the ring *b* and downwardly through the casing while the valve-stem is rising and until the lower valve, *j*, reaches the seat 3 and obstructs the passage through the casing. The water that flows during the upward movement of the valve-stem is technically known as the "first wash," because it washes or wets the bowl of the closet before said bowl is used. The valve-stem and its valves remain in the elevated position (shown in Fig. 2) until the seat of the closet is released by the rising of the sitter, and while the valve-stem remains elevated the water continues to flow in small quantities through an orifice, *p*, in the valve *j* upon the piston *k* and through the opening *n* of the latter into the chamber *e*, the valve *l* resting at this time on the support *m*, and leaving said opening unobstructed. The chamber *e* is thus filled with water while the valve-stem is elevated. When the closet-seat is released, the valve-stem com-

mences to move downwardly, and removes the valve *j* from the seat 3, thus again opening the passage through the casing and allowing water to flow. The descent of the valve-stem is retarded by the water in the chamber *e*, which presses against and closes the valve *l*, as shown in Fig. 2, and escapes slowly through the vent *f'* in the screw *f*. The water is allowed to flow through the casing during the downward movement of the valve-stem until the valve *i* reaches the seat 2 and obstructs the passage through the casing. The water that passes through the casing at this time is known as the "second wash," and its duration is regulated by the screw *f*, which, when screwed into the bottom of the chamber *e*, decreases the size of the vent *f*, and when screwed outwardly increases the size of the vent. This regulating of the duration of the second wash is a feature of much importance.

I do not limit myself in all cases to the employment of a vent in the bottom of the chamber *e*, for it is obvious that if no such vent were employed the water below the piston would escape upwardly between the periphery of the piston and the inner surface of the chamber if the piston were not too closely fitted. I prefer the vent, however, as above described.

The valve *j* is placed loosely on the stem *g*, and is supported by a spring, *s*, so that when the stem *g* is raised quickly the valve *j* will yield and prevent a jar when it strikes its seat.

I claim—

1. The casing having the valve-seats 2 3 and the chamber *e*, combined with the valve-stem *g*, having the valves *i j* and the valved piston *k*, all arranged and operated substantially as described.

2. The combination of the casing having the two valve-seats 2 3, the piston *k*, carrying on its stem the valves *i j*, and the chamber or receptacle *e*, located under said piston, adapted to receive water when the piston is raised, and provided with an adjustable vent in its bottom whereby the escape of water from the chamber, and consequently the rate of descent of the valve-stem and the duration of the second wash, are regulated, as set forth.

3. The combination of the casing having the valve-seats 2 3, and chamber *e*, the valved piston *k*, having the stem *g*, the valve *i*, supported by the stem *g*, and the valve *j*, also supported by the stem *g*, and provided with an orifice, *p*, whereby the chamber *e* is supplied with water when the valve-stem is raised, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 15th day of February, 1883.

TIMOTHY McHUGH.

Witnesses:
THOS. CURLY,
C. F. BROWN.