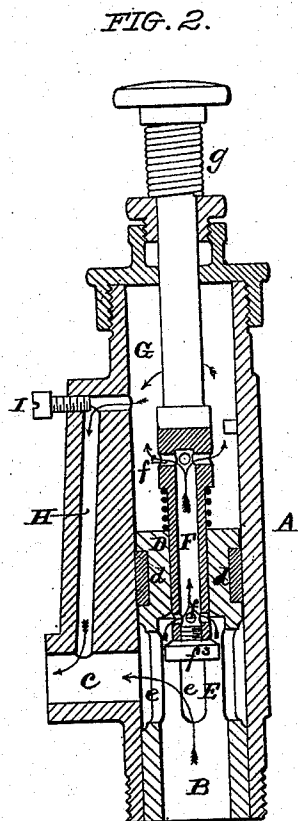
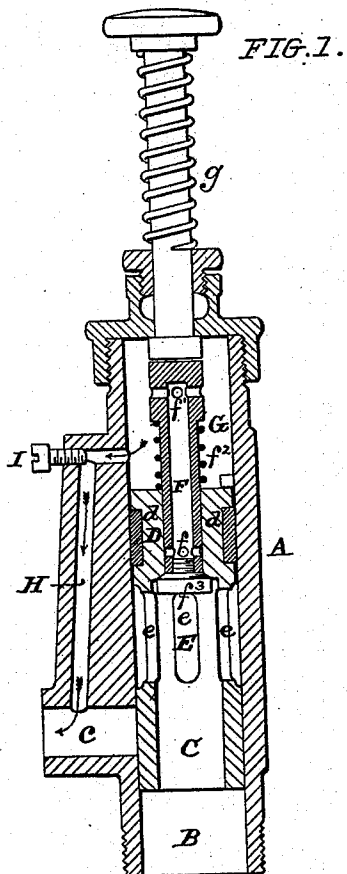


S. S. LEACH.
Water Closet Valve.

No. 231,592.

Patented Aug. 24, 1880.



ATTEST:

Walter Allen
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INVENTOR:

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Atty

UNITED STATES PATENT OFFICE.

SMITH S. LEACH, OF ST. LOUIS, MISSOURI.

WATER-CLOSET VALVE.

SPECIFICATION forming part of Letters Patent No. 231,592, dated August 24, 1880.

Application filed August 19, 1879.

To all whom it may concern:

Be it known that I, SMITH S. LEACH, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Water-Closet Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a valve which, when relieved from its outside pressure, will close by the action of the water; and my invention consists in a plunger so constructed as to admit the outflow of water from the valve when said plunger is forced back by a lever, as usual, and also in the means of closing the valve by water-pressure, as more fully set forth in the sequel.

In the drawings, Figure 1 is a sectional view, showing the valve closed. Fig. 2 is a sectional view, showing the valve open.

A is the body or case of the valve, and B the water-inlet thereto, which may connect with the street-main.

The plunger is composed of cylinders C and D, connected together by means of a connecting-web, E. The web E has perforations *e*, to admit the water passing through the cylinder C, when the valve is open, out through the opening *c* into the closet-pan.

F is a hollow stem passing through the cylinder D, and provided with perforations *f f'*, to admit water into the chamber G when the valve is open. This stem is preferably made in two pieces, the outer part being thrown back by means of a spring, *g*, when relieved from its outside pressure. This double stem is found to give best satisfaction, especially where there is a very low water-pressure, from the fact that the water will not at times overcome so much friction.

The inner portion of the stem F is preferably provided with a spring, *f²*, as shown, so that when the stem is relieved of its outside pressure the valve *f³* will at once close, allowing the full force of the water-pressure to come against the cylinder D and start the closing of the valve by means of the cylinder C. The cylinder D is ground water-tight or is provided with any suitable packing, *d*, to make the same water-tight.

H is an outlet-passage for the water from

the chamber G. The water in its passage through this outlet is regulated by means of any suitable stop, I, and thus it will be seen the closing of the valve is regulated.

The operation of my valve is as follows: The stem F being forced back by any suitable means, it forces the plunger back, allowing the water to flow into the closet-pan, as indicated by the arrows, (see Fig. 2,) also allowing the water to enter the chamber G through the hollow perforated stem, as indicated by the arrows, same figure. As soon as the outside pressure is taken from the stem the springs *g f²* force the stem-valve back against its seat, and thereby shut the water off from the chamber G. As soon as this takes place the water-pressure begins to move the plunger back, and thus to close the valve.

It will be seen that the valve can only close as fast as the water escapes from the chamber G through the opening H, and this is limited by means of a plug, I.

This valve possesses the following advantages over the valves now in use: First, the simplicity of construction, which enables it to be easily and cheaply made; second, its certainty of action, for it will be seen that it would be impossible for it to get out of working order, the time of closing being independent of spring-power or of any uncertain frictional resistances; third, it is easily controlled and adaptable to a large majority of closet mechanisms now in use; fourth, the water is always wire-drawn as the valve closes, thus avoiding the sudden shock and consequent injury to the pipes which attend the closing of the ordinary valve.

I claim as my invention—

1. The combination of a hollow plunger consisting of a middle portion or web, E, perforated at *e* to admit free passage of water, and the hollow cylinders C D, at either end of said web, ground to a water-tight fit, and the perforated stem F, substantially as and for the purpose set forth.

2. The combination of the hollow three-part plunger C D E, hollow stem F, perforated at *f f'* and formed in two parts, the upper part of said stem being operated by external spring, *g*, and the lower part by internal spring, *f²*, substantially as set forth.

3. The combination of the hollow three-part

plunger C D E, hollow perforated stem F, formed in two pieces and provided with springs $g f^2$, and the water outflow channel or passage H, all constructed and arranged substantially as and for the purpose set forth.

5 4. The combination of the case A, hollow plunger consisting of the two water-tight cylinders C D, and the interposed perforated web

E, hollow perforated stem F, formed in two pieces, each part operated by encircling spiral springs, chamber G, channel H, and plug I, substantially as and for the purpose set forth.

SMITH S. LEACH.

Witnesses:

GEO. H. KNIGHT,
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