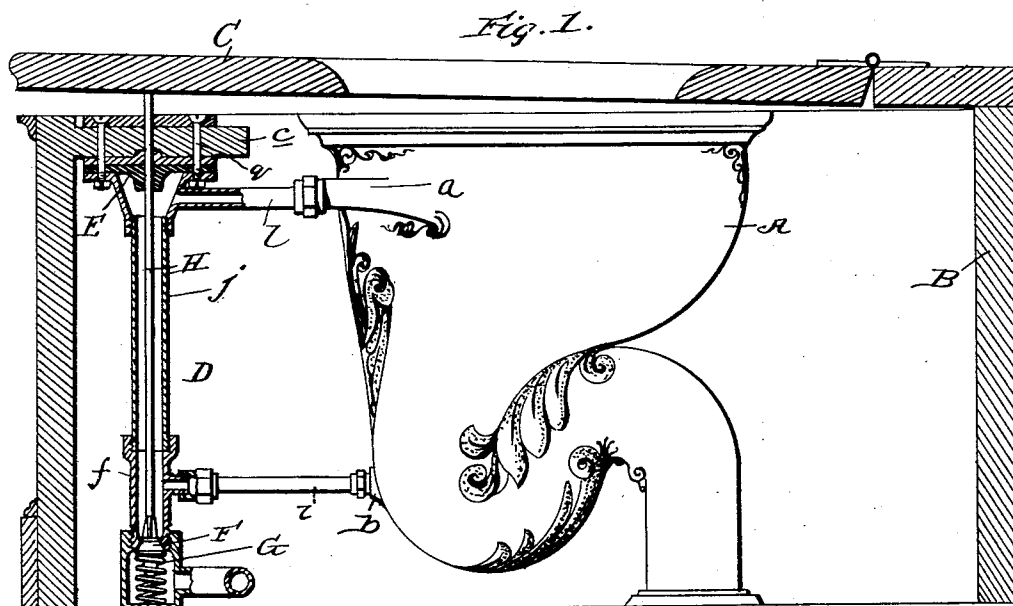
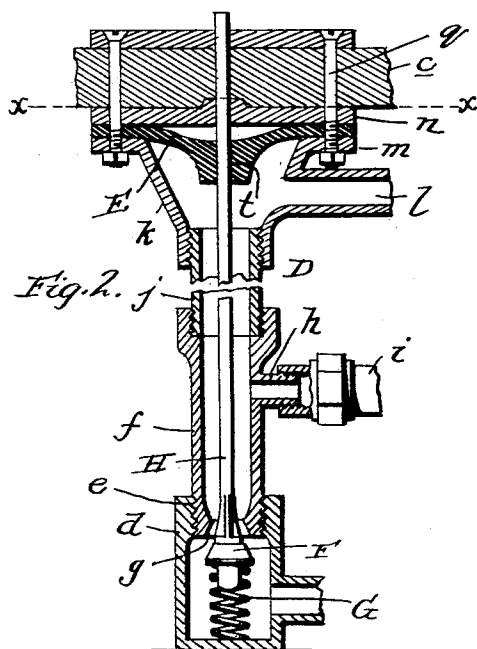
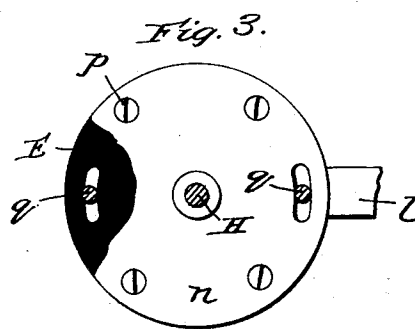


(No Model.)

J. H. SAVILL.
WATER CLOSET VALVE.

No. 590,240.

Patented Sept. 21, 1897.



Witnesses:
C. H. Rader
N. P. Matthews.

Inventor
J. H. Savill
By *James J. Shuey*
Attorney

UNITED STATES PATENT OFFICE.

JOSEPH H. SAVILL, OF PHILADELPHIA, PENNSYLVANIA.

WATER-CLOSET VALVE.

SPECIFICATION forming part of Letters Patent No. 590,240, dated September 21, 1897.

Application filed October 29, 1895. Serial No. 567,264. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. SAVILL, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Water-Closet Valves; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in that class of water-closet valves which are connected with the seat of the closet and are designed to be opened when said seat is pressed downwardly by the weight of a person upon it, so as to admit water into the hopper or bowl of the closet to flush the same; and its novelty and advantages will be fully understood from the following description and claim, when taken in connection with the annexed drawings, in which—

Figure 1 is a vertical section of a closet embodying my invention, with parts in elevation. Fig. 2 is a vertical section illustrating my improved valve mechanism; and Fig. 3 is a detail section taken in the plane indicated by the line *xx* of Fig. 2, with a portion broken away.

Referring by letter to said drawings, A indicates the hopper or bowl of a water-closet, which may have the usual flush-horn *a*, and may also, if desired, have the auxiliary horn *b*, for a purpose presently described.

B indicates the casing or frame which surrounds the bowl or hopper A, and is preferably provided in front of the bowl or hopper with the ledge *c*.

C indicates the seat of the closet, which is connected in a hinged or any other suitable manner with the casing or frame B and is designed to be normally held in the partly-raised position illustrated in Fig. 1, and D indicates the preferably upright casing of my improved valve. This casing D may be made in any desired number of parts, but I prefer for the sake of convenience in manufacturing and placing it in position to form it as better shown in Fig. 2 of the drawings—that is to say, of the lower section *d*, which is designed to rest upon a suitable support or base and be connected with a source of water-

supply and is provided in its upper end with the screw-tapped opening *e*, the section *f*, which is screw-tapped at its lower end to enter the opening *e* of section *d* and is provided at its lower end with the preferably beveled valve-seat *g* and is also preferably provided with the lateral branch *h*, designed to be connected by the pipe *i* with the horn *b* of the bowl, so as to enable water that collects in the casing above the valve to flow into the bowl, the section *j*, which is screwed into the upper end of the section *f*, and the section *k*, which is connected to the upper end of the section *j* and is provided with the lateral branch *l*, designed to be connected with the flush-horn *a* of the bowl or hopper, as shown. This upper section *k* of the casing D is preferably flared upwardly and outwardly and provided with the flange *m* at its upper edge, as shown, and it is designed to support the diaphragm E, of rubber or other suitable material, which is interposed between it and a plate *n*, resting against the under side of the frame-ledge *c*, the casing-section *k*, the diaphragm E, and the plate *n* being connected together by screws or bolts *p*, and being connected with the frame-ledge *c* by bolts *q*, which preferably take through elongated slots in the section *k*, diaphragm, and plate *n*, as shown in Fig. 3.

As will be readily observed, the provision of the elongated slots in the section *k*, diaphragm E, and plate *n* permits them being readily connected by bolts, as the slots of the several parts mentioned may be very easily registered sufficiently to receive the bolts *q*.

F indicates the valve of my improvement. This valve F is designed and adapted to seat upwardly against the seat *g* in the casing D, and it is provided on its under side with the reduced portion *r*, designed to receive the coiled spring G, which is interposed between the bottom of the casing D and the valve and is designed and adapted to return the valve to and normally hold it tightly against its seat, so as to prevent leakage.

The valve F is suitably connected or formed integral with the rod or stem H, and this rod or stem extends upwardly through the center of the diaphragm E and plate *n* and the ledge *c* and impinges at its upper end against or is suitably connected with the seat C, whereby

it will be seen that when the weight of a person is imposed upon the seat it will be depressed, and in consequence the valve will be opened to permit water to flow into the bowl or hopper. When the weight is removed from the seat, the valve will be raised against its seat and the seat C will also be raised and normally held in the position illustrated by the action of the spring G, before described.

As will be readily observed by reference to Figs. 1 and 2 of the drawings, the diaphragm E is increased in thickness at its center, where it is provided with the aperture *t* to receive the valve rod or stem. The aperture *t* is of such a size as to very tightly receive the rod H, and in virtue of this and the elasticity and increased thickness of the diaphragm it will be seen that the diaphragm will be frictionally held to the rod H in a very secure manner and render it necessary to crowd the rod into it and will move with the same. This, as will be readily appreciated, prevents the hole *t* from being worn large by friction, and consequently prolongs the usefulness of the diaphragm and enables the said diaphragm, which is cheap and easy to place in position, to effectually prevent the escape of water from the upper end of the valve-casing and obviates the necessity of employing any packing whatsoever, which is objectionable for the reason that it soon wears out and must be frequently replaced. It will also be observed that this frictional connection of the diaphragm E and rod H renders it unnecessary to employ nuts and similar devices for fixing the diaphragm, and therefore permits of the parts of the device being very easily and quickly put together and materially lessens the cost of the same.

As will be seen by reference to Fig. 2 of the drawings, the diaphragm E moves down with the rod H when the valve is opened and up with said rod when the valve is closed and forms an effectual bar to the passage or escape of any water from the upper end of the valve-casing. It will also be observed that inasmuch as the diaphragm is not subjected

to frictional wear or wear or strain of any kind it will last almost if not quite as long as the other parts of the valve, which is a desideratum.

I have shown an approved way of connecting the valve-casing with the hopper or bowl A, but I would have it understood that such casing may be connected with the bowl or hopper in any manner suitable to the purposes of my invention.

Having described my invention, what I claim is—

In the water-closet valve described, the combination of a bowl or hopper, a vertically-movable seat C, arranged above the bowl or hopper, a valve-casing arranged beneath the vertically-movable seat C, and having the valve-seat *g*, and connection between the valve-casing and the bowl or hopper at a point above the valve-seat, the reciprocatory valve arranged below the valve-seat, the reciprocatory rod or stem connected to the valve and extending upwardly and adapted at its upper end to impinge against or be connected with the seat, a spring adapted to return the valve to and normally hold it against its seat, and the diaphragm E, of rubber secured to the valve-casing above the connection of the same with the bowl and having the central, vertical aperture *t*, receiving the valve rod or stem; the said aperture *t*, being of such diameter or size in comparison to the diameter or size of the rod or stem as to very tightly receive said rod and render it necessary to crowd the rod or stem through it, whereby the diaphragm will be fixed to the rod or stem by frictional contact and the elasticity of the crowded rubber so as to move with said rod in its up-and-down movements, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOS. H. SAVILL.

Witnesses:

W. SAVILL,

GEO. W. CLEMENT.