(No Model.)

G. R. MOORE.

VALVE MECHANISM FOR WATER CLOSET CISTERNS.

No. 311,599. Patented Feb. 3, 1885.

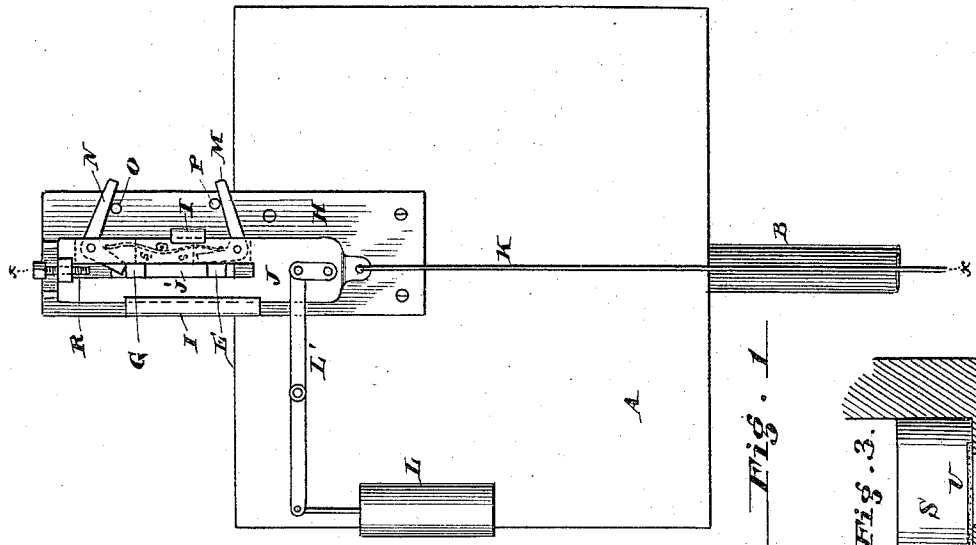


Fig. 1

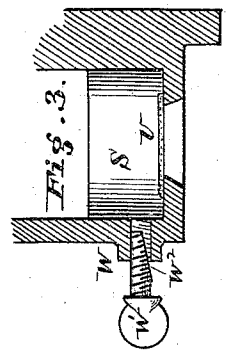


Fig. 3.

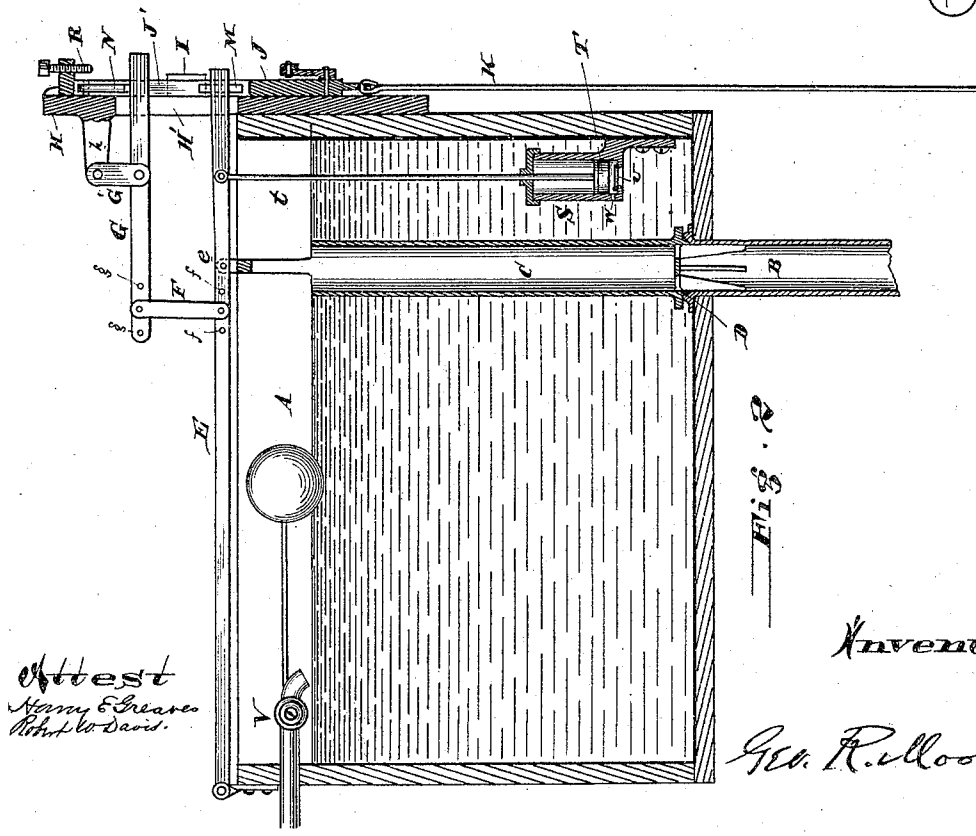


Fig. 2

Attest
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VALVE MECHANISM FOR WATER-CLOSET CISTERNS.

SPECIFICATION forming part of Letters Patent No. 311,599, dated February 3, 1885

Application filed April 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEO. RODNEY MOORE, a citizen of the United States, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Valve Mechanisms for Water-Closet Cisterns, of which the following is a specification.

The main object of my invention is to provide suitable mechanisms for controlling the movements of the cistern-valve, so that the predetermined kind and amount of wash shall be given automatically to the closet at each time of its use, thus securing all the flush desired, and without any waste of water.

In carrying out the main object I have devised simple means for regulating each kind of wash conveniently, also for the removal of any part which may ever need repairs, without disturbing the valve. The valve itself is of simple construction, having a ring-seat at the bottom of the cistern, and a hollow stem about the size of the outlet-pipe extending up to the top water-line of the same, so that it serves as an overflow-pipe. It is guided to its seat by prongs extending down into the outlet-pipe. I attain these objects above referred to by mechanisms illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an end view of a cistern to which my improvements are attached. Fig. 2 is a central vertical transverse section taken at right angles with Fig. 1 on the line *x x*, Fig. 1. Fig. 3 is an enlarged view of the lower part of the water-retard shown in Fig. 2 and marked S.

The same letters indicate the same parts in all the views.

A is the cistern.

B is the outlet-pipe for conducting the water admitted to it from the cistern to any water-closet with which it may be connected.

C is the valve, with a cylindrical valve-stem extending to the highest water-level in the cistern, and thus serves the same as an overflow-pipe.

D is the valve-seat.

E is an operating-lever, pivoted at the back end of the cistern and extending lengthwise over it to a little beyond the front-end face. It is attached to the valve-stem at *e*.

F is a link from the lever E to the lever G, which, through E, becomes also an operating-lever to the valve, and its distance from the fulcrum of G may be changed at will.

G′ is a link from G, to the arm *h* of which the two horizontal levers are attached to the principal frame.

H is the principal frame, to which the moving levers are fitted. It is attached firmly to the cistern, and it has, from the top of the cistern upward, a slot, H′, in which the levers E and G move freely.

I I are fixed guides upon H, and they keep in place the vertical sliding bar J, which has an attached rod, K, by which it may be drawn down. It has also a slot, J′, corresponding to H′ in H. It has also an attached lever, L′, carrying a weight, L, by which it is thrown up whenever not resisted by a downward pull upon K. L is a counter-balance of J.

M and N are trip-levers, pivoted to the sliding bar J, and respectively operating the horizontal levers E and G.

O is the tripping-pin for N, and P the same for M.

R is a set-screw in J, and moves with it. Its use is to regulate the "middle wash," as soon to be shown.

S is a water-retard, made much like a small pump or syringe, with a cup-leather or other packing, T, and a little feed-valve, U, and a discharge-aperture, W, provided with a regulating-screw, W′, which is so shaped by filing away a part, W^2, that it serves to regulate the exit of water from the cylinder. The piston-rod *t* is loosely pivoted to the operating-lever E carrying the valve. The ball and cock V are the usual devices for inlet of water to cisterns.

s s are springs for operating the trip-levers M and N.

f f and *g g* are optional holes for pivoting F to its respective levers to change their leverage.

Having thus defined the lettered parts of the mechanisms shown, I trust it will not be difficult to show the mode of their operation. It will be seen that the levers E and G, coupled as they are by the link F, their free ends in front must always move in opposite directions. If the valve is to be raised by the lever G, its free end must be pressed down-

ward; but if by the lever E, its free end must be carried upward, and as neither of these levers are ever moved, except by the sliding bar J, which has but two motions, downward and upward, it follows that J in going downward opens the valve through its lever G, and in going upward through its lever E. Now, observing the trip-levers, one operates upon the upper side of G, and the other upon the under side of E. If J is pulled down, as the levers are now shown, the valve will be opened until the trip-lever N, by the stem O, is thrown off from G, at which time the trip-lever M will fall below its lever E, and be in readiness to raise it up when J shall be carried up by the weight L, through L'. As long as J remains wholly up or wholly down it does not control the levers at all, except as hereinafter to be shown, or when a middle wash is desired.

The three kinds of wash consist of what are commonly called a "fore wash," an "after wash," and a "middle wash." As J moves downward it occasions the fore wash by acting upon G. Then, if a middle wash is desired, the screw R is turned, so that it will act upon G to keep it down, and thus the valve open, as much as may be desired, as long as J remains down; but whenever J is carried up by the weight L it opens the valve until the trip-lever is thrown off by the stud P, and thus is produced the after wash. It remains to be more expressly stated how these three kinds of wash are to be conveniently regulated so as to continue for a predetermined and desired length of time, and the length of time relatively changed, if desired, among them. Whenever the valve is opened, the water-retard S takes in water below its piston T, and thus keeps the valve from closing until the said water shall be expelled, which can only be by way of the regulating-screw W, and this screw may be turned in so tightly that it will take the longest time desired for the water to escape, and just so long will the valve be kept open in both the fore wash and the after wash; but again, if the valve is opened very wide the retard S will take in more water, and hence give a longer wash. It is convenient, therefore, to regulate the after wash satisfactorily, and then, if the fore wash is too much or too little, change the link F to other pins in the levers which it connects until G will open the valve for the fore wash, as desired. The middle wash is adjusted easily by the set-screw R. When J is pulled down by the seat of a water-closet, or in any other way, the screw R should be turned down upon G enough to open the valve all that may be desired while the closet-seat is occupied. Thus either kind of wash can be regulated by itself. Any other known kind of retard can be used in place of S, if desired.

Having thus fully explained my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. In combination, the cistern A, frame H, sliding bar J, lever E, valve C, trip-lever M, and counter-balance L, substantially as and for the purpose herein set forth.

2. In combination, the cistern A, valve C, frame H, sliding bar J, levers E and G, and trip-levers M and N, substantially as and for the purpose herein set forth.

3. In combination, the cistern A, frame H, sliding bar J, levers E and G, trip-levers M and N, spring *s*, counter-balance L, pull-rod K, valve C, and retard S, as and for the purpose herein set forth.

4. In combination, the cistern A, valve C, levers E and G, with connecting-link F, changeable to two or more places, as shown in this case, by the pivotal centers *f f* and *g g*, so that the leverage from the free end of G in its reach toward the valve is changed and the fore wash is thereby regulated, as and for the purpose herein set forth.

GEO. R. MOORE.

Witnesses:
ROBERT W. DAVIS,
HARRY E. GREAVES.