(No Model.)

M. L. MITCHELL.

FLUSH TANK FOR WATER CLOSETS.

No. 560,912. Patented May 26, 1896.

Fig. 1.

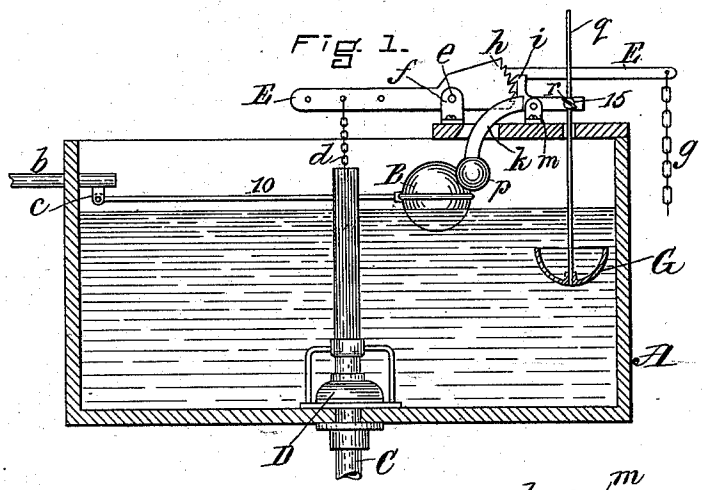


Fig. 2.

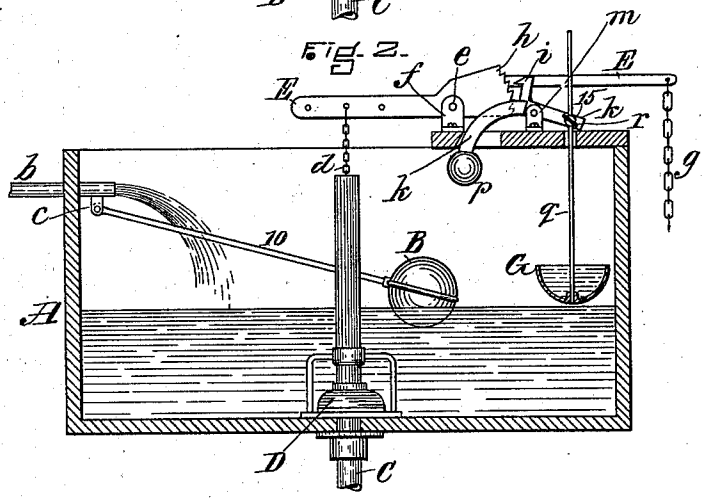
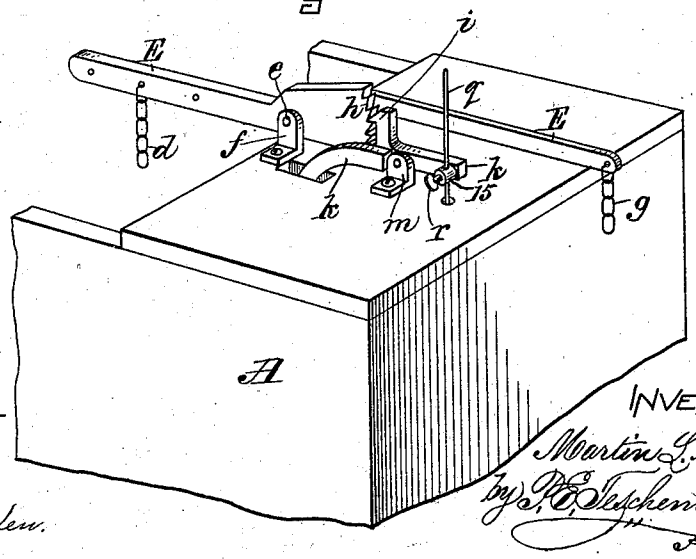


Fig. 3.



WITNESSES.

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MARTIN L. MITCHELL, OF BELFAST, MAINE.

FLUSH-TANK FOR WATER-CLOSETS.

SPECIFICATION forming part of Letters Patent No. 560,912, dated May 26, 1896.

Application filed February 12, 1896. Serial No. 579,075. (No model.)

To all whom it may concern:

Be it known that I, MARTIN L. MITCHELL, a citizen of the United States, residing at Belfast, in the county of Waldo and State of Maine, have invented certain Improvements in Flush-Tanks for Water-Closets, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a longitudinal vertical section of a water-closet flush-tank constructed in accordance with my invention, the operating parts being shown as they appear when the tank is fully supplied with water and both the inlet and outlet valves are closed. Fig. 2 is a similar section showing the operating parts in the position which they occupy when the water in the tank is sufficiently low to cause the outlet-valve to be closed and the inlet-valve to be open to admit a fresh supply of water. Fig. 3 is a perspective view of one end of the tank, showing a portion of the mechanism for operating the outlet-valve.

My invention relates to flush-tanks for water-closets in which a tripping device is employed to regulate the discharge of the water; and my invention has for its object to improve the construction of the mechanism for operating the outlet or flushing valve, whereby the catch or retaining device which holds the valve open will act to engage the valve-lever at any portion of the downward movement of its outer end, while the tripping device can be readily adjusted to permit of the escape of any desired amount of water from the tank.

To this end my invention consists in the combination, with the outlet-valve and its operating-lever, the latter provided with a ratchet, of a lever provided with a catch or projection and having a weight at one end adapted to keep said catch normally in contact with the ratchet, said catch-lever being provided at its opposite end with a vertical rod, to the lower end of which is secured an open cup adapted to be normally submerged in the water when the tank is fully supplied, whereby when the water in the tank descends below the level of the cup the weight of the water contained in the latter will overbalance the weighted end of the catch-lever, thereby withdrawing the catch from the ratchet to release the lever and permit the outlet-valve to close, as hereinafter more fully set forth.

In the said drawings, A represents a water-closet flush-tank, which is provided, as usual, with a supply-pipe *b*, having an inlet-valve *c*, operated by a ball-float B and float-lever 10 in the ordinary manner.

C is the outlet or flushing pipe, which is provided with a drop-valve D, of any suitable form and construction, located, as usual, at the center of the bottom of the tank and connected by a chain *d* to a lever E, pivoted at *e* to a bracket *f*, attached to the tank and provided at its opposite end with a pull chain or cord *g*, by means of which the lever can be operated to raise the valve when required. On one side of the lever E is formed a ratchet *h*, with which engages a catch or projection *i* on a short curved lever *k*, pivoted to a bracket *m*, attached to the top of the tank and having at its lower end a ball or counterpoise-weight *p*, which keeps the catch *i* normally in engagement with the ratchet *h*, and to the opposite end of this lever *k* is secured a vertical rod *q*, which carries at its lower end an open cup G, preferably composed of sheet metal and adapted to lie beneath the surface of the water when the tank is fully supplied, as shown in Fig. 1, and when thus submerged in the water the cup and its suspending-rod *q* will be overbalanced by the counterpoise-weight *p*, which will thus keep the catch *i* in contact with the ratchet *h*, as above described. The rod *q*, which supports the cup G, is made to slide through the end of the lever *k*, preferably through a stud 15, projecting laterally therefrom and capable of a slight axial movement, whereby the rod is made vertically adjustable to vary the depth to which the cup is submerged, said rod being clamped when adjusted by a thumb-screw *r*.

When the tank is fully supplied with water, as shown in Fig. 1, and a flush is required, the lever E is pulled down by taking hold of the chain *g*, which thus raises the valve D from its seat, allowing the water to escape through the pipe C. As the lever is pulled down the catch *i* will successively engage the teeth of the ratchet *h*, thereby holding the valve open without regard to the amount of movement of the lever, which I consider a great advantage, as it insures as perfect a

flush with a very slight pull or movement of the outer end of the lever as is produced when it is pulled down the entire distance. As soon as the water in the tank descends below the open cup G the weight of the water contained in the latter will overbalance the weight *p* of the lever *k*, the latter being thereby moved in the proper direction to withdraw the catch *i* from the ratchet *h*, as shown in Fig. 2, to release the lever E, the heavier inner end of which then drops, permitting the valve D to close and shut off the further escape of water from the tank. The inlet-valve *c* being now open the water rises in the tank to its normal level, as shown in Fig. 1, again submerging the cup G, which will then be overbalanced by the weight *p*, when the catch *i* will again be brought into contact with the ratchet *h* ready to hold the lever E when again pulled down by means of the chain *g*, as before described.

Instead of making the cup of circular form, as shown, it may be of any other suitable shape—for instance, semicircular—in order that it may lie close to the side of the tank, if the latter should be of small size, and instead of securing the end of the rod *q* to the inside of the bottom of the cup it may be attached to the same on the outside or in any other preferred manner. It will be seen that the rod *q* will hold the cup G steadily in position while the tank is being filled and also that the cup may be readily and quickly adjusted by an inexperienced person without the use of tools by simply sliding the rod *q* down or up through the end of the lever *k* and clamping it by the thumb-screw *r*, whereby the cup may be submerged more or less below the level of the water, its distance below the surface determining the quantity of water which will escape from the tank. The cup may thus be adjusted to let out a small quantity of water—for instance, two inches—or nearly the entire contents of the tank, and the position of the cup will always show at a glance what quantity of water will leave the tank.

As the pull-lever and its retaining mechanism have no connection with the inlet-valve, they may be arranged in any convenient position with respect to the tank, which is of great advantage, as it cannot always be determined on which side it is most desirable to have the pull-chain until after the tank has been set in position.

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

1. In a flush-tank, the combination with the outlet-valve and its operating-lever, the latter provided with a ratchet, of a lever having a catch or projection adapted to successively engage the teeth of said ratchet as the outer end of the valve-operating lever is pulled down, whereby the valve is held open after a long or short movement of the lever until the water in the tank falls to a predetermined level, said catch being weighted at one end and having at its opposite end a vertically-arranged rod carrying at its lower end an open cup adapted to be submerged in the water when the tank is fully supplied, substantially as described.

2. In a flush-tank, the combination with the outlet-valve and its operating-lever, the latter provided with a ratchet, of a lever having a catch or projection adapted to successively engage the teeth of said ratchet as the outer end of the valve-operating lever is pulled down, whereby the valve is held open after a long or short movement of the lever until the water in the tank falls to a predetermined level, said catch being weighted at one end and having at its opposite end a vertically-arranged rod carrying at its lower end an open cup adapted to be submerged in the water when the tank is fully supplied, said rod being made vertically adjustable with respect to the catch-lever, whereby the cup may be submerged at different depths to vary the amount of water permitted to escape from the tank at a single operation of the outlet-valve, substantially as set forth.

3. In a flush-tank, the combination with the outlet-valve D, of the lever E, connected with said valve and provided with a ratchet *h*, the lever *k*, weighted at its inner end and having a catch or projection *i*, normally held by said weighted end in contact with said ratchet and adapted to successively engage the teeth of the same, the vertically-adjustable rod *q*, attached to the outer end of the lever *k*, and carrying at its lower end the open cup G, adapted to be submerged in the water when the tank is fully supplied, and the thumb-screw *r*, for clamping the rod *q*, when adjusted, all constructed to operate substantially in the manner and for the purpose set forth.

Witness my hand this 10th day of February, A. D. 1896.

MARTIN L. MITCHELL.

Witnesses:
C. N. BLACK,
S. G. DUNBAR.