

No. 762,444.

PATENTED JUNE 14, 1904.

J. H. SMITH.

FLUSHING APPARATUS FOR WATER CLOSETS, &c.

APPLICATION FILED MAY 13, 1902.

NO MODEL.

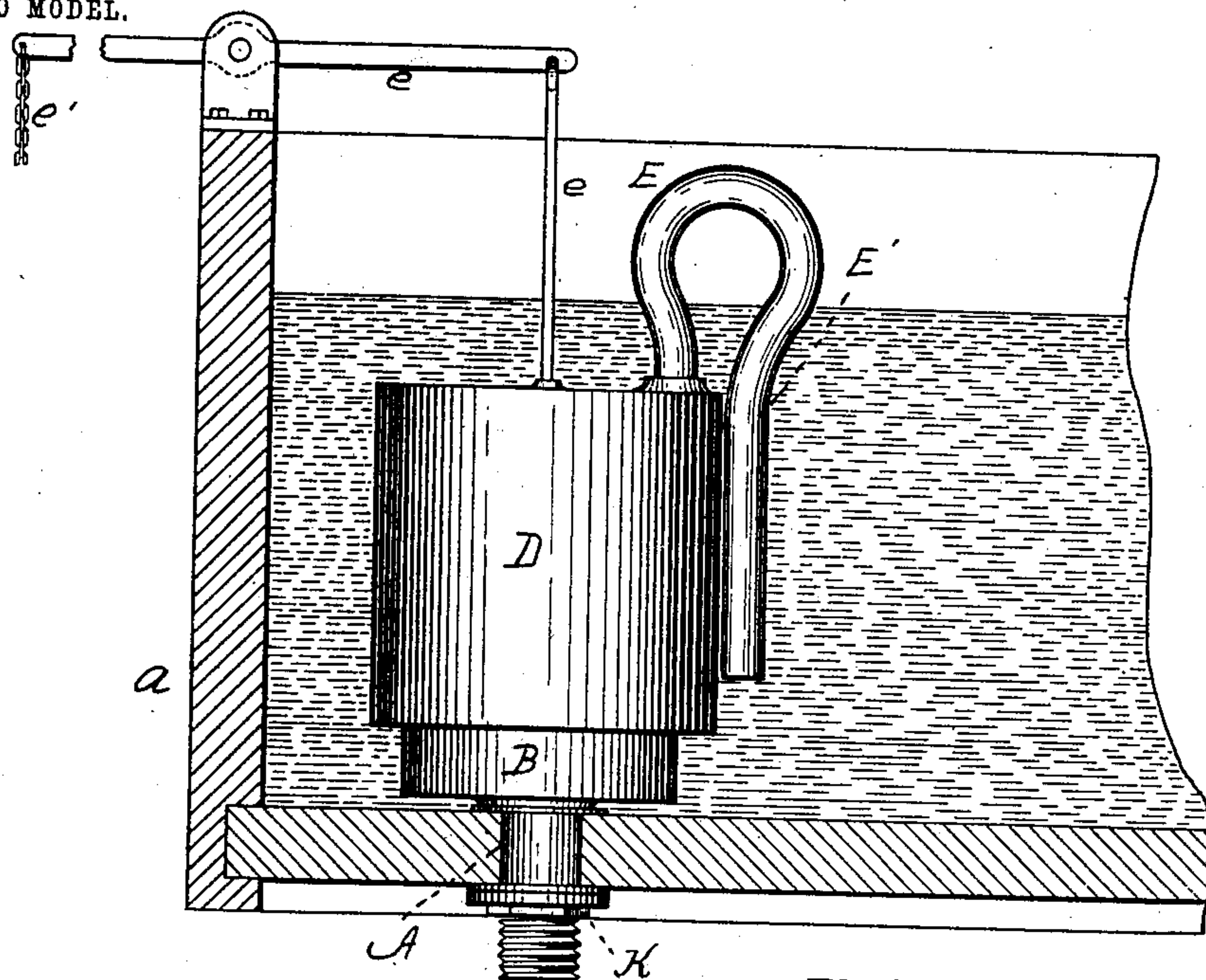


FIG. 1.

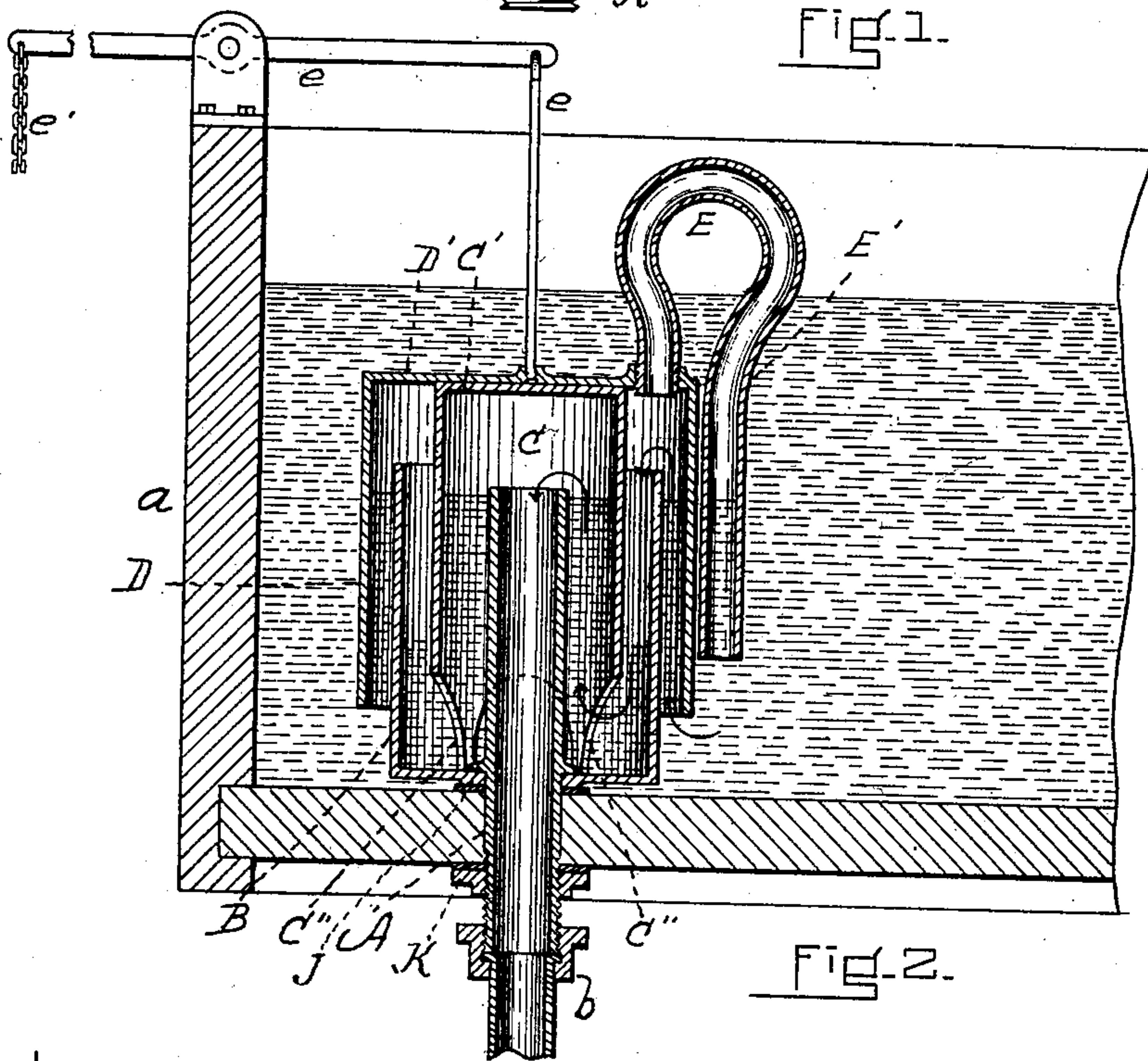


FIG. 2.

WITNESSES.

A. R. Bonney.

A. K. Hood.

INVENTOR.

John H. Smith

By his Atty.

Sperry Williams



# UNITED STATES PATENT OFFICE.

JOHN H. SMITH, OF REVERE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF  
TO GEORGE R. SACKETT, OF REVERE, MASSACHUSETTS.

## FLUSHING APPARATUS FOR WATER-CLOSETS, &c.

SPECIFICATION forming part of Letters Patent No. 762,444, dated June 14, 1904.

Application filed May 13, 1902. Serial No. 107,077. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. SMITH, a citizen of the United States, residing in Revere, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Flushing Apparatus for Water-Closets, &c., of which the following is a specification.

This invention has for its object to provide for use in supply-tanks for water-closet-flushing purposes a discharge-controlling device or valve which, while simple and inexpensive, is durable, has no parts in rubbing or sliding contact and liable to get out of repair and is certain in its operation.

The nature of the invention is fully described in detail below and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved device in its normal position in a tank or cistern, a portion of which is shown in vertical section. Fig. 2 is a central vertical section of the same.

Similar letters of reference indicate corresponding parts in both the figures.

In the drawings, *a* represents an ordinary supply tank or cistern, and *b* is the flush-pipe, which extends down to the closet.

*A* is a stand-pipe extending up vertically from the flush-pipe into the tank and centrally into a preferably circular cup *B*, which is rigid with said pipe *A* and whose upper end is open and preferably somewhat higher than the upper end of the pipe *A*.

*D* represents a movable inverted vessel or bell larger in diameter than the cup *B* and inclosing the latter. The top *D'* of the vessel *D* is connected by the ordinary mechanism *e* with the pull-chain *e'*, and the bottom is open and raised above the bottom of the tank.

*C* is an inverted hood or trap, which is smaller in diameter than the cup *B*, is open at its lower end, and rests on the floor of the cup *B*, the said hood being located within the bell *D*. The upper end *C'* of the hood *C* is considerably higher than the open upper end of the cup *B*, and the lower portion of the hood *C* is cut out, and thus provided with passages *C''*, as indicated in Fig. 2, so that the hood, as here shown, rests on feet between the said

passages or openings and is not attached to the bell. Secured to and extending through the upper end *D'* of the vessel *D* is a curved tube *E*, which preferably extends a considerable distance above the normal water-level and is then bent downward into the leg *E'*, which is open at its lower end.

The stand-pipe *A* constitutes the longer leg of a siphon, the shorter leg of which is the annular space between the cup *B* and bell *D*. The upper portion of the bell above the cup *B* constitutes an air-chamber adapted to contain a cushion of air, which normally obstructs the crown of the siphon and prevents liquid from flowing through the same. The hood or trap *C* prevents communication between said air-chamber and the stand-pipe.

Prior to the flushing operation the parts are in the position shown in the drawings, the water in the tank being above the upper end of the stand-pipe and above the lower end of the air-passage *E E'*. An air-cushion is now confined in the bell *D* and obstructs the crown of the siphon, so that no water can flow over the upper edge of the cup *B*. When the bell is raised or displaced upwardly, the air-cushion is correspondingly displaced, permitting the water to rise in the shorter leg of the siphon and flow over the upper edge of the cup *B* and to the stand-pipe through the hood *C*. A siphonic flow is thus started, which continues after the release and return of the bell to its normal position until the water in the tank falls below the lower end of the air-passage, and thus opens the air-chamber to the atmosphere, whereupon the water falls in the shorter leg and the siphon is broken. When the water again rises in the tank, it seals the lower end of the air-passage, and thus causes the formation of another air-cushion in the crown of the siphon.

The stand-pipe *A* is preferably externally screw-threaded at its lower portion to engage the coupling member which connects it with the pipe *b*. Above the threaded portion the stand-pipe is provided with a flange *J*, which coöperates with a clamping-nut *K* in securing the stand-pipe to the bottom of the tank, the flange *J* being above and the nut *K* below



said bottom. The flange J is preferably utilized also as a means for clamping the bottom of the cup B against the bottom of the tank. It will be seen, therefore, that provisions are  
5 made for conveniently applying the stand-pipe and the parts cooperating therewith to a tank and to the pipe leading from the tank to the closet.

The tube E E' constitutes a convenient  
10 means for breaking the siphon when the desired quantity of water has been discharged. The upward extension of the tube above the bell D adds to the area of the air-chamber, and by reason of the curved portion said tube  
15 is rendered flexible, whereby it may be bent to raise or depress its lower end, thus decreasing or increasing the quantity of water that escapes during each operation, the tube or air-passage being therefore adjustable.

20 It will be seen that there are no rubber washers or other parts liable to get out of repair and that the device, which may be of any suitable metal, is exceedingly durable.

I claim—

25 1. A flushing apparatus comprising a stand-pipe adapted for attachment to a supply-tank and constituting the longer leg of a siphon, a fixed cup surrounding the upper portion of the stand-pipe, a vertically-movable bell surrounding and extending above the cup, the  
30 space between the bell and cup constituting the shorter leg of the siphon, while the upper portion of the bell constitutes an air-chamber adapted to confine a cushion of air in position  
35 to obstruct the crown of the siphon, an inverted hood or trap located within the bell and over the upper end of the stand-pipe, said hood preventing communication between the said air-chamber and the stand-pipe, means for  
40 raising and depressing the bell, and an air-tube communicating at one end with the said air-chamber and at its other end with the interior of the tank at a point below the upper portion of the bell, said tube being curved

and having its last-mentioned end vertically 45 adjustable, the raising of the bell permitting a flow of liquid through the crown of the siphon, which flow continues after the depression of the bell, until the liquid in the tank falls below the lower end of the air-tube and  
50 opens the said air-chamber of the siphon to the atmosphere, thereby breaking the siphon.

2. A flushing apparatus comprising a stand-pipe having an externally-threaded lower portion and an external flange above said threaded 55 portion, a clamping-nut engaged with said threaded portion and cooperating with the flange in securing the stand-pipe to the bottom of a tank, the said stand-pipe constituting the longer leg of a siphon, a fixed cup 60 surrounding the stand-pipe above the flange thereof and having a bottom engaged by said flange, a vertically-movable bell surrounding and extending above the cup, the space between the bell and cup constituting the shorter 65 leg of the siphon, while the upper portion of the bell constitutes an air-chamber adapted to confine a cushion of air in position to obstruct the crown of the siphon, an inverted hood or trap located within the bell and over 70 the upper end of the stand-pipe, said hood preventing communication between the said air-chamber and the stand-pipe, means for raising and depressing the bell, and an air-tube communicating at one end with the said 75 air-chamber and at its other end with the interior of the tank at a point below the upper portion of the bell, said tube being curved and having its last-mentioned end vertically 80 adjustable.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN H. SMITH.

Witnesses:

HENRY W. WILLIAMS,  
A. N. BONNEY.