

No. 776,014.

PATENTED NOV. 29, 1904.

J. DOUGLAS.

AUTOMATIC DISCHARGE MECHANISM AND VALVE.

APPLICATION FILED AUG. 26, 1903.

NO MODEL.

Fig. 1.

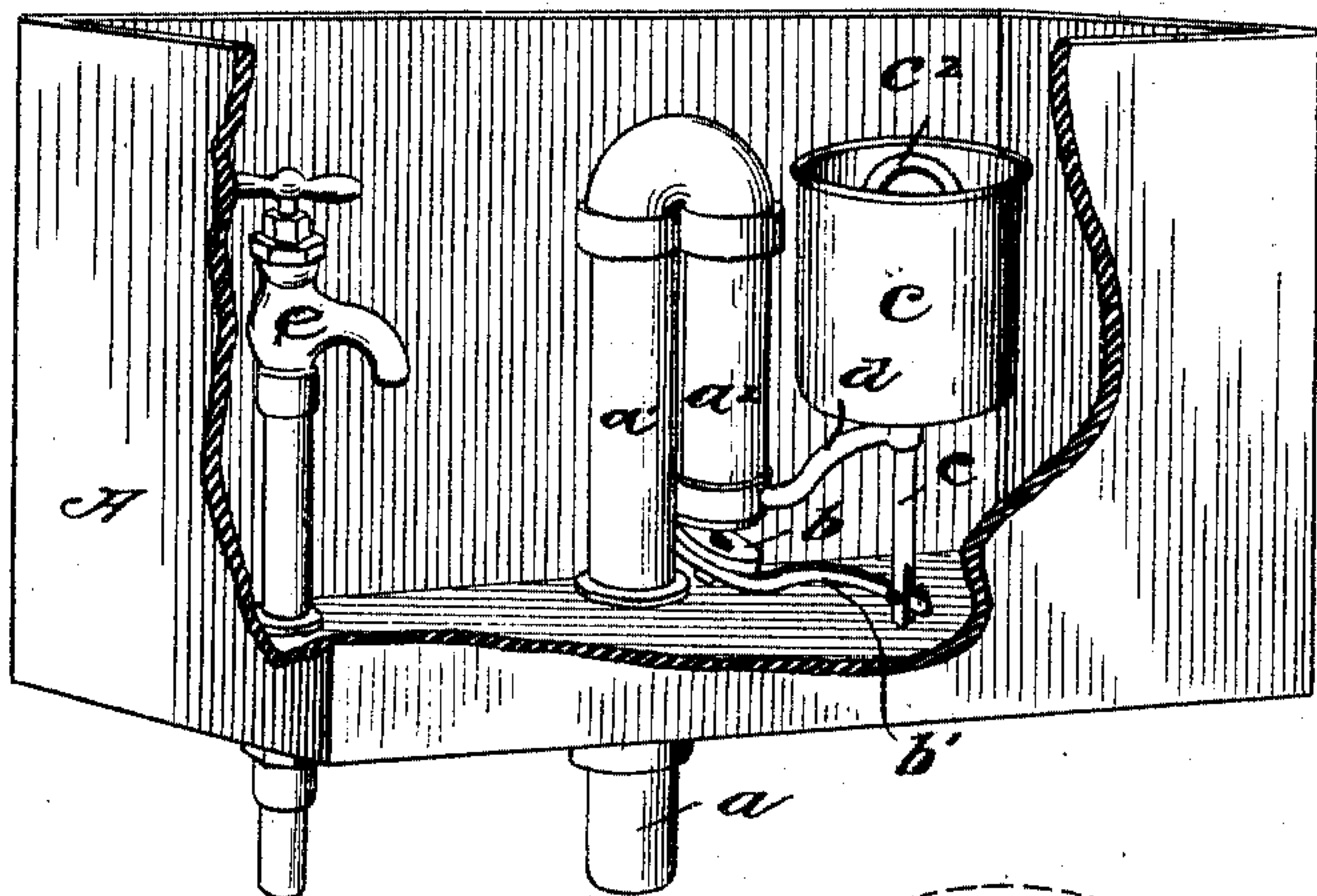
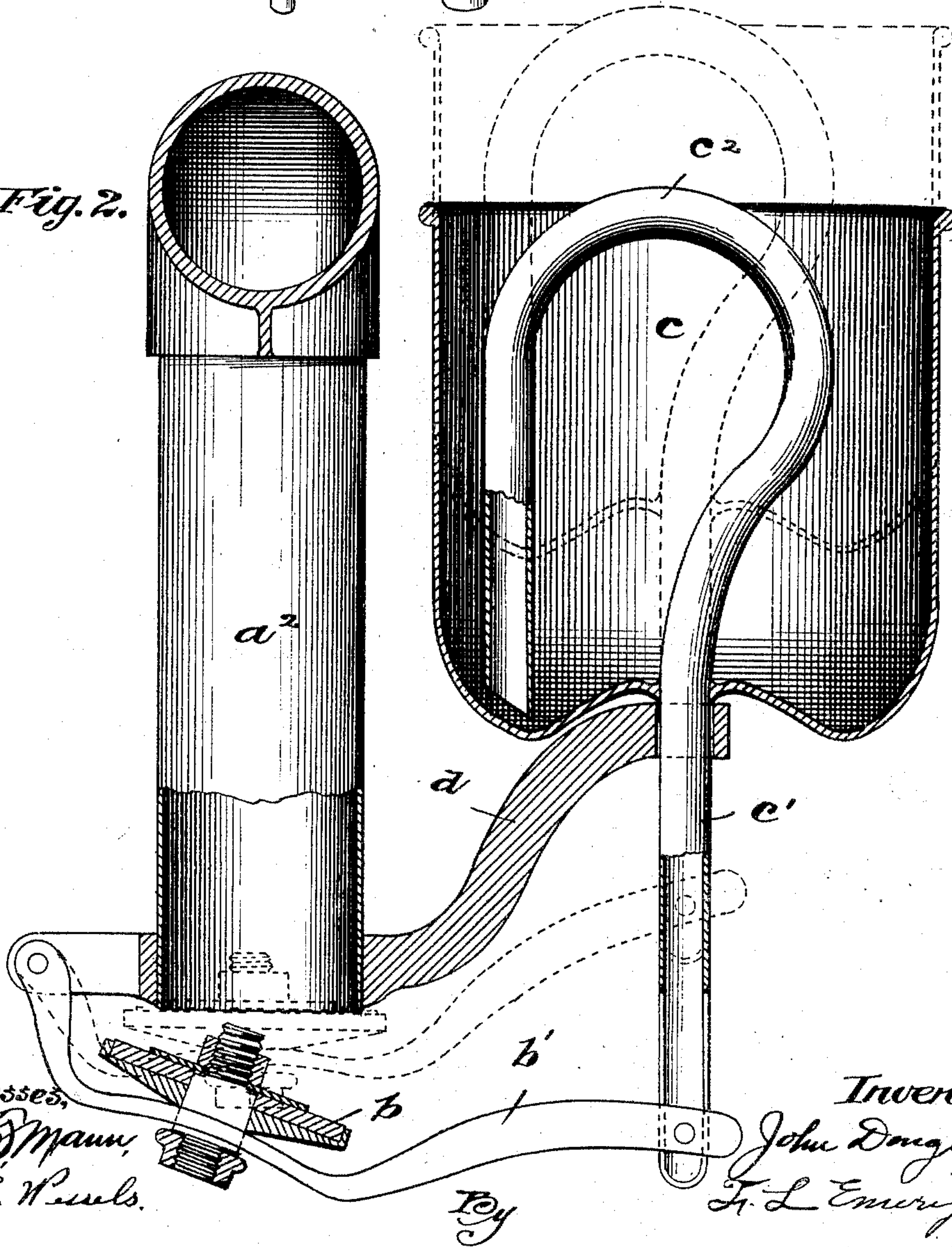


Fig. 2.



Witnesses,  
F. J. Mann,  
C. E. Neels.

By

Inventor,  
John Douglas  
F. L. Emery  
Att'y



## UNITED STATES PATENT OFFICE.

JOHN DOUGLAS, OF CINCINNATI, OHIO.

## AUTOMATIC DISCHARGE MECHANISM AND VALVE.

SPECIFICATION forming part of Letters Patent No. 776,014, dated November 29, 1904.

Application filed August 26, 1903. Serial No. 170,780. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN DOUGLAS, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented an Improvement in Automatic Discharge Apparatus, of which the following is a specification.

My invention relates to the construction of automatic discharge mechanism and valves therefor adapted, among other purposes, to be used in connection with sanitary devices or any other relation where an intermittent but copious flow of water is desired.

My object is to provide such discharge mechanism or valves which shall be simple in construction, containing but few parts, which cannot easily get out of order, and which shall be automatic in operation—that is to say, when water in the tank or other vessel with which my mechanism is intended to be used shall have reached a predetermined level or stage the mechanism will operate automatically to discharge the contents of the tank through a suitable pipe or other orifice.

Other features of the invention will appear in the following description and claims.

In the drawings, Figure 1 is an elevation, partly in section, of my improved mechanism. Fig. 2 is a detail sectional view of the valve and adjacent parts.

In the particular embodiment of my invention herein selected for illustration the valve proper is shown in connection with a flushing-tank A for flushing a sanitary or set of sanitar-  
ies and comprises an inverted-U-shaped pipe or siphon member *a*, having one of its extremities, *a'*, passing through the bottom of the tank and provided with a suitable coupling for connection with the flush-pipe of the sanitary. The other extremity or arm, *a''*, of the pipe *a* terminates, as shown, a short distance above the bottom of the tank, and preferably at or near its lower end is pivotally mounted in any suitable manner, preferably on lugs *a'''*, a valve member *b*, having an arm *b'* projecting from any convenient and suitable part thereof.

Adjacent to the pipe *a* is located an operating member *c*, comprising in the embodiment shown a hollow cup having projecting through

the bottom thereof a stem *c'*, which is preferably a hollow tube and forms an extension or one leg of a siphon-tube *c''*, the other extremity of which terminates within and close to the bottom of the cup *c*. The stem *c'* of the cup *c* is slidably mounted in any suitable support, but preferably on the extremity of an arm *d*, projecting from the extremity *a''* of the tube *a*, and, as shown, stem *c'* is pivotally connected with the outer extremity of the arm *b'* of the valve *b*, so that when the cup *c* rises it raises the valve *b* and forces the latter against the lower extremity of the arm *a''* of the tube *a*, thereby closing the orifice of the arm *a''* of said pipe. Upon depressing the cup *c* from its elevated position the valve *b* drops away from the orifice in arm *a''* and thereby opens the same.

As before stated, my invention is usually, though not necessarily, employed with the flushing-tank of a sanitary to which water from a suitable source is supplied through a spigot or faucet *e* to intermittently release and discharge the contents of the tank at intervals, varying as desired to flush the sanitar-  
ies.

The operation of my valve is as follows: Water is turned into the tank A through the spigot *e*, and as it rises more or less rapidly it reaches the operating member *c* and partially submerges it until at a certain predetermined stage of the water around the member *c* the buoyancy of the latter overcomes its weight and that of the attached arm *b'* and valve *b*, and thereafter the cup or member rises with the rising water until stopped by contact of valve *b* with the orifice of arm *a''*. The water continuing to flow into tank A rises farther until pipe *a* is completely submerged and until finally the water flows over the rim and into the cup *c* itself, thereby converting the latter from a float into a weight, which then sinks, and consequently opens valve *b*. Inasmuch as at this time the water completely covers the pipe *a*, upon thus opening the valve in arm *a''* water rushes into and fills said pipe, and as the arm *a'* thereof extends below the level of the orifice in arm *a''* the pipe *a* is converted into a siphon in a well-known manner, and therefore drains tank A to the level of



the lower extremity of arm  $a^2$ , thereby practically emptying the tank.

Having described the operation of emptying tank A through the instrumentality of the siphon member  $a$  and operating member  $c$ , it remains to show how the latter is again converted from a weight into a float. As above stated, the stem  $c'$  forms an extension of a hollow tube  $c^2$ , the other extremity of which terminates within the cup  $c$ . Hence when the level of the water in the tank A falls below the bottom of member  $c$  the stem  $c'$  and pipe  $c^2$  will constitute a small siphon which serves to empty said member  $c$  of water and convert the member again into a float.

As will be seen from an inspection of the figures of the drawings, the upward movement of the operating member  $c$  is limited by contact of valve  $b$  with the orifice of arm  $a^2$  of pipe  $a$ , while its downward movement is determined by contact of the bottom of member  $c$  with the extremity of arm  $d$ . These parts are so relatively arranged that in its upper position the rim of member  $c$  will project about one-half inch above the top of pipe  $a$ , and in its lower position the bottom thereof will be located some distance above the orifice of arm  $a^2$ , so that the water, on the one hand, may rise completely above pipe  $a$  before the operating member is depressed and, on the other hand, that the water in the tank may fall sufficiently below the member  $c$  to permit of its being completely emptied by

the siphon. It is obvious that the member  $a$  must be of such dimension as will empty the tank more rapidly than spigot  $e$  can supply water thereto. By varying the head of water supplied to the tank the intervals between successive operations of the mechanism may also be varied, for obviously the more rapidly the tank is filled the oftener will be the discharge thereof.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an automatic flushing apparatus, a tank and a flushing-pipe therefor, a main siphon to empty said tank, a valve for closing said siphon, a lever on said valve, a convertible float and weight to operate said valve, a siphon to empty said float and connecting the lever with the convertible float and weight.

2. In an automatic discharge apparatus a main siphon member, a valve therefor, an operating-lever for said valve, a convertible float and weight to operate said lever, and discharge means for said float and weight connecting the latter with said lever.

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

JOHN DOUGLAS.

Witnesses:

H. BURCKHARDT,  
J. R. PARRY.