

(No Model.)

E. L. POWELL.
FLUSHING VALVE.

No. 551,475.

Patented Dec. 17, 1895.

Fig. 1.

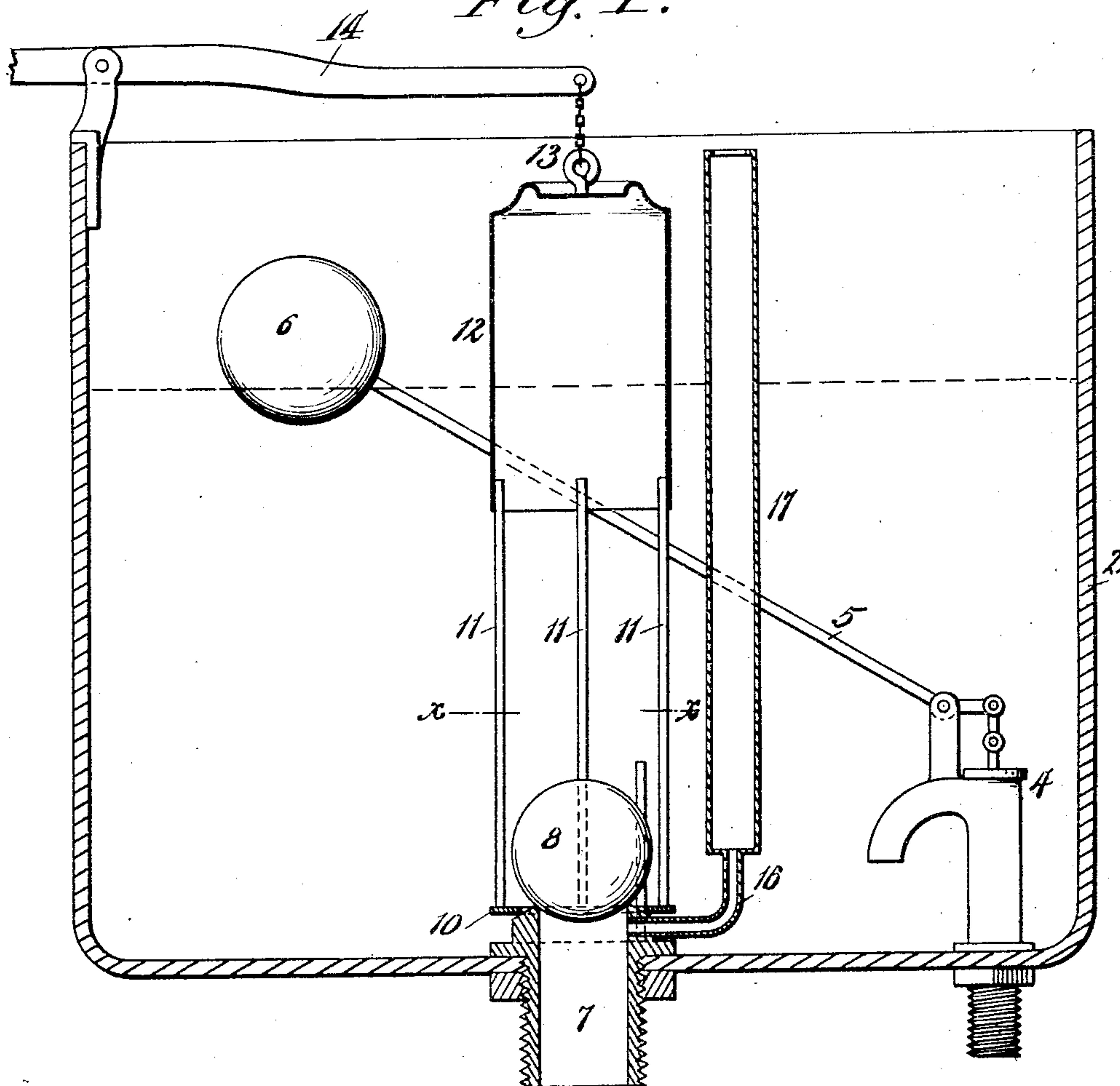
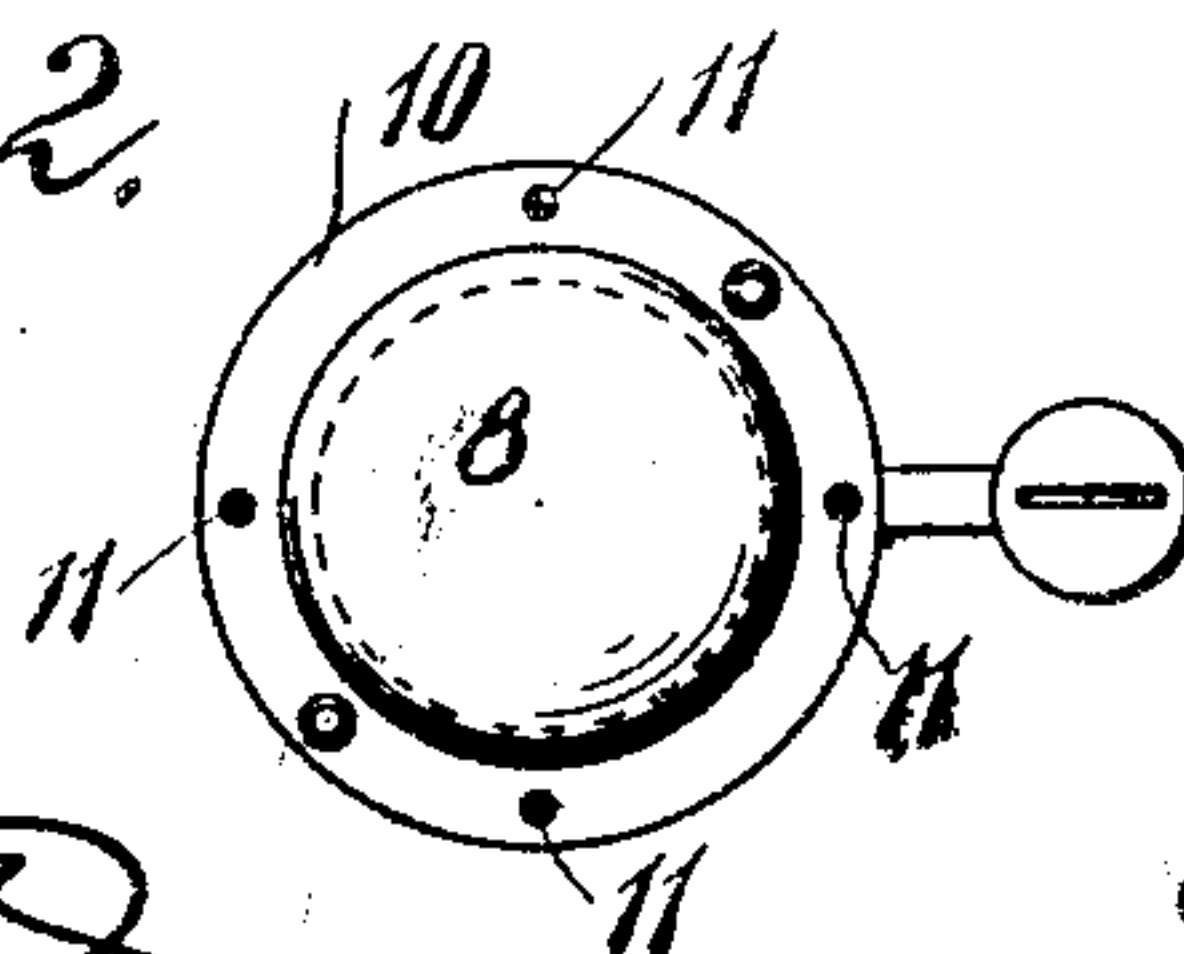


Fig. 2.



WITNESSES:

John H. Deemer
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INVENTOR

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UNITED STATES PATENT OFFICE.

EDWARD L. POWELL, OF ATLANTIC, NEW JERSEY.

FLUSHING-VALVE.

SPECIFICATION forming part of Letters Patent No. 551,475, dated December 17, 1895.

Application filed March 25, 1895. Serial No. 543,017. (No model.)

To all whom it may concern:

Be it known that I, EDWARD L. POWELL, a citizen of the United States, and a resident of Atlantic Highlands, county of Monmouth, and State of New Jersey, have invented certain new and useful Improvements in Flushing-Valves, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar figures of reference indicate corresponding parts in all the views.

This invention relates to flushing-tanks to be operated in connection with water-closet basins, urinals, &c.; and the object thereof is to provide an improved valve mechanism for such tanks, which shall be simple in construction and effective in operation, and which is comparatively inexpensive.

A further object of my invention is to prevent the objectionable noise due to pounding, which occurs in the usual automatic valve mechanism.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 represents a central vertical section of a tank provided with my improvement, and Fig. 2 a section on the line *x x* of Fig. 1, looking downwardly.

Referring to Fig. 1 of the drawings, the numeral 2 designates a flushing-tank of any suitable form, material and capacity, and 3 a water-supply pipe for the same, the flow of water therethrough being regulated as usual by an ordinary valve 4, with which is connected a lever 5 provided with a float 6.

Secured in the bottom of the tank in any desired manner is a pipe 7, the inner end or opening of which is designed to be closed by a hollow ball-valve 8, which is preferably composed of rubber or some similar flexible material. This valve is preferably located within a carrier or frame consisting of an annular bottom plate 10 adapted to surround and fit upon the top of the tube 7, as shown in Fig. 1, the top of said tube being preferably inclined downwardly and said plate resting upon said inclined surface, the upright rods 11, the lower ends of which are secured to said plate and the upper ends thereof being secured to a hollow cylinder 12, the bottom of which is open and the top of which is

closed and provided with a loop or other attaching device 13, with which is connected one end of a chain, the other end thereof being connected with a lever 14. This cylinder is preferably composed of thin sheet metal or similar material, and it is not essential that all the rods 11 be connected with said cylinder, but only a sufficient number thereof to form guides for the valve and to support said cylinder. Connected with the upper end of the pipe 7 within the tank 2 and below the opening of said tube and the valve thereon is a small pipe 16, the outer end of which is curved upward and communicates with a tube or pipe 17, which preferably extends to about the top of the tank and is provided in its upper end with a narrow slot 18; through which said pipes 16 and 17 and the slot 18 air enters the pipe 7 beneath the ball, thereby clearing the full pipe below the valve of the weight of the water therein. This pipe must necessarily be full of water when the valve closes, and the weight of said water is such as to force the ball down so heavily as to cause it to rebound, resulting in a constant hammering. The particular form of air-tube shown is designed to prevent whistling of the air as it rushes down the tube.

The lower end of the pipe 7 is provided with a screw-thread on its outer surface, as shown, by which said pipe is adopted to be connected with an ordinary waste-pipe in the usual manner, and the operation of the apparatus is substantially as follows: When there is no water in the tank the ball-valve 8 of course lies in its seat in the plate 7, and when the air rises in the tank the pressure thereof is such as to retain the ball in this position.

To discharge the water from the tank the lever 14 is operated in the usual manner to raise the carrier or frame 9, by which operation the valve 8 is also lifted from its seat by the annular plate 10 at the bottom of said carrier, when the water within the tank will be allowed to flow out through the pipe 7 in the usual manner, and this flow will be continued as long as the valve 8 remains unseated. In this class of devices, however, the lever 14 is usually held only a moment or so, and when it is released the valve is usually seated and the flow cut off. In my apparatus the valve 8 will not be resealed as soon as the

lever is released, unless said lever is held long enough to permit of the discharge of the contents of the tank down to or approximately to the top of the pipe 7, at which time the valve will be reseated and the further flow of water through said pipe prevented until the lever 14 is again operated, as before described, when the operation of the valve, as set out, will be again repeated.

10 The object of closing the upper end of the cylinder 12 is in order that it may form an air-chamber and thus, should the valve 4 for any reason fail to act, the said cylinder, and therewith the frame and ball 8, will be buoyed
15 by the water rising in the tank, so that the discharge-tube will be opened to allow egress of the water, and will thus prevent overflow of the tank.

I do not confine myself to the exact form and construction of the parts shown and described, as it is evident that many changes therein may be made without departing from the scope of my invention; but,

20 Having fully described said invention, its construction, and operation, what I desire to secure by Letters Patent is—

1. A device of the class described, comprising a tank provided with an automatically operated water supply, a discharge pipe, a removable frame adjacent the pipe, a valve
30 carried by the frame and adapted to close the discharge pipe when the frame is lowered and to open it when the frame is raised, and an air-chamber carried by the frame and
35 adapted to buoy and raise the valve when energized.

2. The combination, with a flushing tank having an automatically controlled water supply, of a discharge pipe secured in the
40 bottom thereof, the inner open end of which is adapted to be closed by a hollow elastic ball

valve, said valve being located in a frame by which the ball valve may be lifted from its seat, said frame being provided with an upper portion consisting of a hollow cylinder, the lower end of which is open, and the upper end closed and connected with an operating lever, and a tube within said tank communicating with the discharge pipe below the valve seat and with a tube extending upwardly through said tank and provided at its upper end with a narrow opening, substantially as shown and described.

3. The combination, with a flushing tank having an automatically controlled water supply, of a discharge pipe located in the bottom thereof, a hollow elastic ball adapted to close the mouth of said tube, a frame within which said valve is located and by which it is operated, consisting of an annular bottom plate adapted to surround the opening in the inner end of the pipe, vertical rods connected with said annular plate and extending upward and connected with the hollow cylinder, and the lower end of which is open and the upper end of which is closed, and connected with an operating lever, and a pipe communicating with the discharge pipe below the valve seat and with a tube or pipe extending upwardly through the tank, the upper end of which is provided with a small opening, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 10th day of March, 1895.

EDWARD L. POWELL.

Witnesses:

PERCY T. GRIFFITH,
A. M. CUSACK.

It is hereby certified that the residence of the patentee in Letters Patent No. 551,475, granted December 17, 1895, upon the application of Edward L. Powell, for an improvement in "Flushing Valves," was erroneously written and printed "Atlantic, New Jersey," whereas said residence should have been written and printed *Atlantic Highlands, New Jersey*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 11th day of February, A. D. 1896.

[SEAL.]

JNO. M. REYNOLDS,
Assistant Secretary of the Interior.

Countersigned:

JOHN S. SEYMOUR,
Commissioner of Patents.