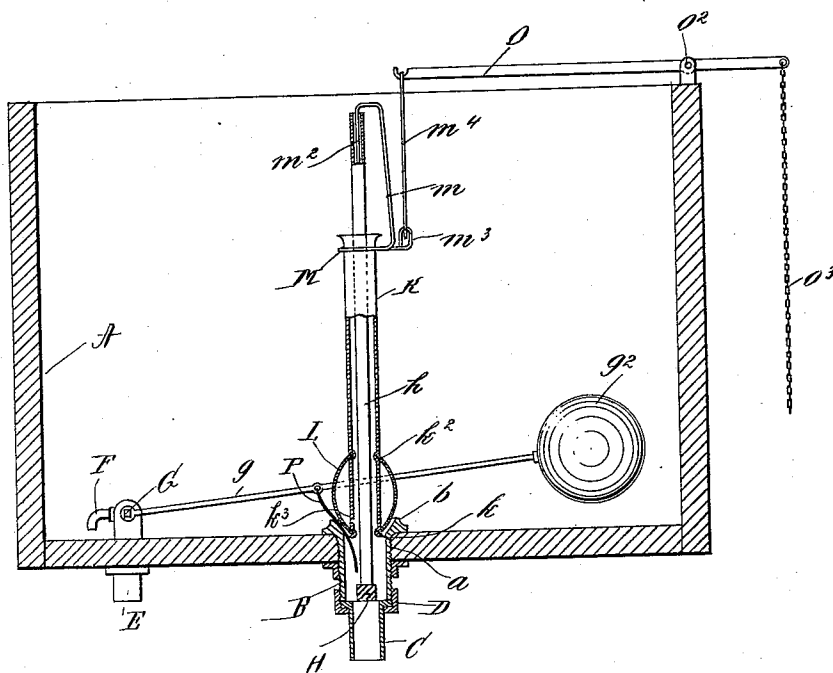


(No Model.)

E. L. POWELL.
VALVE FOR FLUSH TANKS.

No. 564,338.

Patented July 21, 1896.



WITNESSES:

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EDWARD L. POWELL, OF ATLANTIC HIGHLANDS, NEW JERSEY.

VALVE FOR FLUSH-TANKS.

SPECIFICATION forming part of Letters Patent No. 564,338, dated July 21, 1896.

Application filed January 30, 1896. Serial No. 577,347. (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, in the county of Monmouth and State of New Jersey, have invented certain new and useful Improvements in Valves for Flush-Tanks, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof, in which similar letters of reference indicate corresponding parts.

This invention relates to the flushing-tanks for water-closets, such as are usually employed in the water systems of dwelling-houses, hotels, and other buildings, and which employ valve-controlled flushing-pipes which communicate with closet bowls, basins, or similar devices in order to supply water thereto; and the object of this invention is to provide an improved valve mechanism for controlling the flow of water through such pipes; and the invention consists in the construction, combination, and arrangement of parts hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, said drawing being a central vertical section of a flushing-tank provided with my improvement.

In the practice of my invention I provide a tank A, which may be of any desired form, size, or construction, and which may also be composed of any desired material, and formed in the bottom thereof is an opening *a*, in which is placed a tubular spur B, the upper end of which is provided with a circular head in which is formed an annular inwardly-inclined valve-seat *b*, and to the lower end of which is secured a flush-pipe C by means of a coupling ring or band D. The tank A is also provided with a supply-pipe E, which passes through the bottom thereof and is provided with a discharge spout or nozzle F, and the passage through the supply-pipe is controlled by a valve G, which is operated by an arm or lever *g*, to the free end of which is secured a float *g*²; but this construction forms no part of my invention, as the same is old in the art.

In the bottom of the tubular plug B is a cross-bar H, to which is secured a tubular rod *h*, which extends upwardly through the

annular valve K, the upper end of which is outwardly flared, forming an annular enlargement. The lower end of said tube is provided with an inwardly-directed annular groove *k*, and at a predetermined distance above the annular groove *k* is a similar annular groove *k*², and mounted on the lower end of said tube is a hollow rubber or other flexible valve L, which is elliptical in form in longitudinal section, and each end of which is provided with a circular opening through which the sleeve K is passed, and said valve is held in place by the elasticity or contractile force thereof, which holds the ends thereof in the annular grooves *k* and *k*² in the tube K, and formed in the lower end of said tube or adjacent to the lower annular groove *k* is a small port or opening *k*³ to afford free access of air to the interior of the valve or bulb L and render the same more expansive and buoyant and to allow any water which may leak into the bulb to escape therefrom through said port or opening *k*³.

Mounted upon the upper end of the tube K is a band or collar M, with one side of which is connected an arm *m*, which extends upwardly above the tubular rod *h*, and the end of which is curved over and passed downwardly into said tubular rod, as shown at *m*², forming a movable guide or support for the tube K, and pivotally connected with the collar M at *m*³ is a rod *m*⁴, which is connected with the inner end of the lever O, which is fulcrumed at the side of the tank O², and the outer end of which is provided with a chain or cord O³.

In practice I provide the lever *g* with a flexible cord P, of any desired material, the free end of which is adapted to enter the tubular plug B, and the operation will be readily understood from the foregoing description, when taken in connection with the accompanying drawing.

It will be understood that the water flows through the supply-pipe E automatically and fills the tank A to the desired extent, and that the overflow thereof is prevented by the lever *g* and the float *g*², connected therewith, being elevated by the incoming water to close the valve G, and should this valve fail to cut off the supply of water in the tank A the tube K is designed to act as

an overflow-tube and prevent the water in the tank from exceeding a certain height.

Whenever it is desired to flush a bowl or basin, it is only necessary to pull downwardly on the cord or chain O³, when the tube K will be raised by the lever O and the flexible valve L will be raised from its seat *b* to the surface of the water in the tank, when the chain may be released and the valve will descend with the water and be seated after the water has been discharged through the tubular plug B and the flush-pipe C, it being understood that the flush-pipe C is connected with the bowl or basin in the usual manner, and it will also be understood that the valve L is a float-valve and it contains air, and, further, that the arms *m* serve to guide and regulate the movement of the tubular tube K, and to hold said tube in a vertical position in order that the valve L may be exactly and evenly seated.

Under ordinary circumstances the water would rush through the pipe C with such force that when the valve L reaches its seat after the release of the chain or cord O³ all the water remaining in said pipe would rush therethrough, and also into and out of the bowl or basin, and to prevent this and to provide a refill I secure to the arm a cord or string P, which is carried into and retained in the tubular plug B by the action of the water flowing therethrough, and this string or cord provides means whereby a small amount of water may be slowly passed or fed through the tubular plug B, and thus reach the bowl or basin and remain therein.

The object of the small hole or aperture *k* in the lower end of the tubular sleeve K is to provide means whereby the valve L may be filled with air at all times, and when said valve is raised by the operation of the lever O, as herein described, the valve L will rest upon the water as the water flows out of the tank until it reaches its seat, as shown in the drawing, and it will be held in this position when the tank is again refilled and remain seated until the lever O is again operated.

My improvement will be found to obviate most of the objections to flush-tanks as now constructed, and it is evident that changes in and modifications of the construction herein described may be made without departing from the spirit of my invention or sacrificing its advantages, and I reserve the right to

make all such alterations therein and modifications thereof as fairly come within the scope of the invention.

Having fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination in a flushing-tank provided with a tubular discharge-pipe in the bottom thereof in which is formed an annular valve-seat, of a tubular rod passing upwardly therethrough, a tube mounted on said rod, a flexible ball or elliptical valve on the lower end of said tube, a collar mounted on the upper end of said tube, and provided with an arm which is carried upwardly and inserted into said tubular rod, and said collar being also connected with an operating-lever, the lower end of said tube being also provided with a small hole or opening which is inclosed by said valve, and said tank being also provided with a water-supply pipe which is controlled by an automatic valve with which is connected a lever provided with a float, substantially as shown and described.

2. The combination with a flushing-tank, provided with a tubular discharge-pipe in the bottom thereof in which is formed an annular valve-seat, of a tubular rod passing upwardly therethrough, a tube mounted on said rod, a flexible ball or elliptical valve on the lower end of said sleeve, and provided with an arm which is carried upwardly and inserted into said tubular rod, and said collar being also connected with an operating-lever, the lower end of said tube being also provided with a small hole or opening which is inclosed by said valve, and said tank being also provided with a water-supply pipe, which is controlled by an automatic valve with which is connected a lever provided with a float, and said lever being also provided with a piece of flexible material which is adapted to enter the tubular plug through which the water passes, and to retain the valve unseated, whereby a refill for bowl is afforded, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 23d day of January, 1896.

EDWARD L. POWELL.

Witnesses:

C. GERST,
L. M. MULLER.