

No. 736,504.

PATENTED AUG. 18, 1903.

F. N. DIXON.  
FLUSHING APPARATUS.  
APPLICATION FILED JULY 16, 1901.

NO MODEL.

FIG. 1.

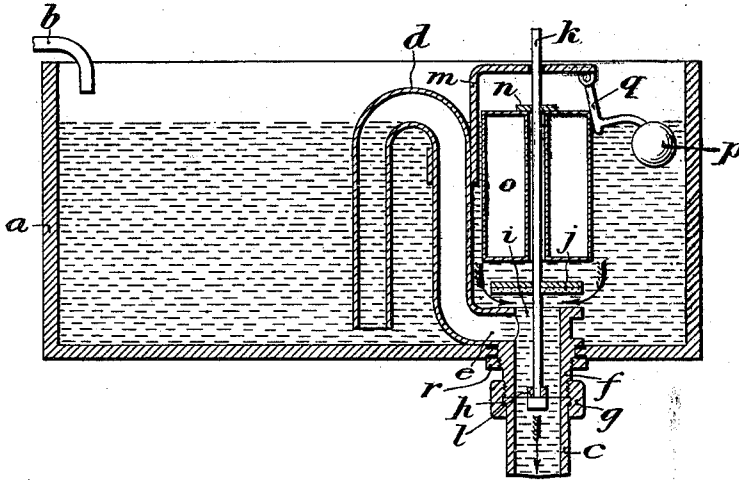
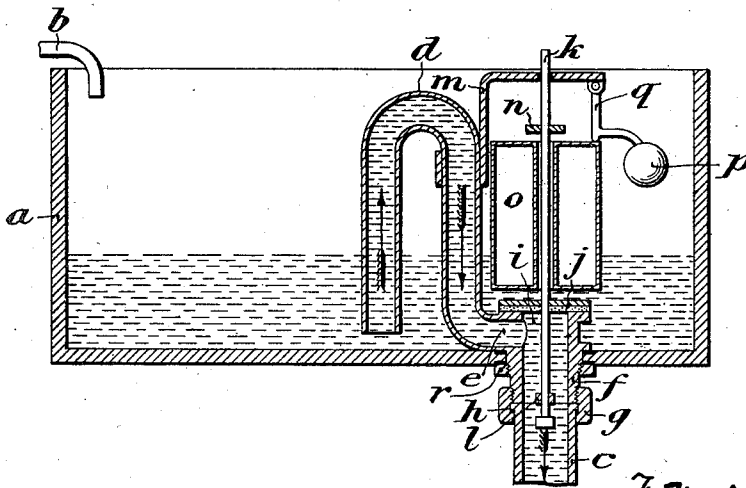


FIG. 2.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

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## FLUSHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 736,504, dated August 18, 1903.

Application filed July 16, 1901. Serial No. 68,461. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERIC N. DIXON, a citizen of the United States, residing in the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Flushing Apparatus, of which the following is a specification.

My improvements relate to flushing tanks used for various purposes in the arts, usually in connection with the sanitary appliances of residences, factories, and public buildings of various character.

It is the object of my invention to provide in connection with a tank, a water supply leading thereto, and a discharge pipe leading therefrom to the structure which it is desired to flush, a compact, strong, and simple, apparatus which, controlling the outlet to the discharge pipe, shall periodically permit the flow of the water from the tank through the discharge pipe in a full head or volume to occasion an effective flushing operation,—such apparatus being equally operative whether the water supply to the tank be large or minute.

In the accompanying drawings I illustrate and herein I describe, that embodiment of my invention which with my present knowledge I prefer,—the particular subject-matter claimed as novel being hereinafter definitely specified.

In the accompanying drawings,

Figures 1 and 2 are views in vertical sectional elevation of an apparatus embodying my invention, the parts being in Figure 1 in the position which they occupy in the early part of the flushing operation when the valve has been elevated from its seat and the water is escaping from the tank directly into the discharge pipe, and in Figure 2 in the position they occupy in the latter part of the flushing operation after the direct flow of water from the tank to the discharge pipe has so far lowered the liquid level in the tank that the descent of the buoy has permitted

the seating of the valve and while the water is flowing to the discharge pipe through the siphon.

Similar letters of reference indicate corresponding parts.

In the accompanying drawings, *a* is the flush tank, *b* the inlet or supply pipe therein, and *c* the discharge pipe.

*d* is a siphon the longer leg of which is provided with a lateral extension *e*, conveniently provided with an integral annular neck *f* which extends through the bottom of the tank, and is, below said bottom, by means of a collar *g* of usual construction, connected with the discharge pipe. The extension *e* and neck *f* constitute in effect a prolongation of the leg of the siphon.

Said neck is conveniently provided with a lip or flange *h* and a screw collar or nut *r* which make contact with the upper and lower faces respectively of the tank bottom about the opening through which said neck extends and assist in the making of a water tight connection between said neck and said tank bottom. The opposing faces of said collar and nut may if desired be provided with facings of rubber, as indicated.

The adjustment of the nut *r* on the neck of course enables the making of a tight fitting connection of the parts.

The shorter leg of the siphon terminates a short distance above the bottom of the tank.

*i* is the outlet opening conveniently formed in the top of the neck in line with the discharge pipe.

*j* is a valve adapted to a seat encircling the outlet opening *i*, and said valve is secured to a valve-stem *k*, the lower end of which stem passes through a suitable guide aperture in a cross bar *l* extending across the interior of the neck *f*, while its upper end extends through a suitable guide aperture formed in a bracket *m* attached for support to the body of the siphon.

*n* is a projection suitably secured to the upper portion of the valve stem. *o* is a buoy

conveniently of annular form and shown as encircling the valve stem and free for limited longitudinal movement independent of it.

*p* is a float secured to the outer end of an approximately L-shaped arm *q* pivotally connected at its inner or upper end to the bracket *m*.

The valve *j* is conveniently provided on its under side with a facing of packing material to insure a water tight closure of the outlet opening.

The normal position of the valve is that in which it is down upon its seat, in which position, of course, it closes the outlet opening.

As the water supplied to the tank through the pipe *b* accumulates, it is, of course, without direct effect upon the valve, but tends to elevate the buoy, *o*.

In the normal position of the parts, however, as shown in Figure 2, the float *p* and its arm *q* depend in such position that said arm is in the path of upward movement of the buoy and for the time prevents its ascent.

As the water accumulates in the tank its surface portion will in time reach such an elevation as to encounter the float *p* and bear it upward.

On such elevation of the float it will move in an upwardly extending arc concentric to its point of pivotal attachment to the bracket *m*, and consequently the arm *q* will be carried away from the top of the buoy, and, the latter being no longer restrained, will rise through the water with a strong abrupt movement, and, encountering the stop *n*, will also elevate the valve stem and valve, the upward movement of the valve stem being limited by the engagement of an enlargement upon its lower end with the lower side of the cross bar *l*.

As soon as the valve has been thus elevated from its seat the water will rush directly into the outlet opening *i* and into the discharge pipe *c* in a volume which will, owing to the valve being elevated a considerable distance away from the valve seat, be full and swift.

The parts being thus in the position shown in Figure 1, the water escaping directly into the discharge pipe will proportionately lower the liquid level in the tank, and in the lowering of the liquid level the buoy *o* and float *p* will be also lowered, and as soon as the water level has descended sufficiently far the parts will resume the set shown in Figure 2. The valve *j*, being no longer sustained by the buoy returns to its seat, and shuts off the escape of the water except through the siphon.

The volume of water within the discharge pipe *c* will in its descent immediately upon the reseating of the valve, establish a siphoning action through the siphon, and the water from the tank will continue to flow through the siphon into and through said discharge

pipe until the liquid level has lowered to the inlet end of the siphon. Thereupon the flow of water through the discharge pipe will be discontinued.

The flushing operation just described will be repeated when the volume of water within the tank has again reached the level required to occasion the movement of the parts described.

As will be understood, the parts composing my apparatus form one simple compact structure to be furnished complete and in readiness to be put in position in any kind of tank, the structure being self-contained so to speak in that no detached parts are employed and no connections to the wall or top of the tank required.

The float arm is through the bracket supported by the body of the siphon, and the upper guide bearing for the valve stem is constituted by the bracket which is, so to speak, an extension of, in that it is supported by, the body of the siphon.

Having thus described my invention, I claim—

1. In a flushing apparatus, in combination with a tank having a discharge pipe, a port leading to said discharge pipe, a fixed siphon, the longer leg of which is in communication with said discharge pipe, a valve controlling said port, a buoy free for limited movement with respect to said siphon, a device adapted to be encountered and elevated by the buoy in its upward movement, the elevation of which device occasions the elevation of the valve, and a buoyant arm which normally depends in the path of said buoy to restrain its ascent, but which is adapted to be floated out of said position to release said buoy.

2. In a flushing apparatus, in combination with a tank having a discharge pipe, a port leading to said discharge pipe, a fixed siphon, the longer leg of which is in communication with said discharge pipe, a valve controlling said port, a stem connected with said valve, a buoy mounted on said stem and free for limited vertical movement with respect thereto, a stop connected with said stem, adapted to be encountered by said buoy, a pivotally supported buoyant device which normally depends in position to encounter and hold down said buoy, but which may be floated out of said position, and a guide for said valve stem.

3. In a flushing apparatus, in combination with a tank having a discharge pipe, a port leading to said discharge pipe, a siphon, the longer leg of which is in communication with said discharge pipe, a valve controlling said port, a stem connected with said valve, a buoy mounted on said stem and free for limited vertical movement with respect thereto, a stop connected with said stem, adapted to be encountered by said buoy, a pivotally sup-

ported buoyant device which normally depends in position to encounter and hold down said buoy, but which may be floated out of said position, and a bracket mounted on the siphon which serves as a guide for said valve stem and to which bracket said buoyant device is pivotally connected.

4. In a flushing apparatus, in combination with a tank having a discharge pipe, a port leading to said discharge pipe, a fixed siphon, the longer leg of which is in communication with said discharge pipe, a valve controlling said port, a stem connected with said valve, a buoy mounted on said stem and free for limited vertical movement with respect thereto, a stop connected with said stem, adapted to be encountered by said buoy, a pivotally supported buoyant device which normally depends in position to encounter and hold down said buoy, but which may be floated out of said position, a bracket mounted on the siphon including a guide for said valve stem to which bracket said buoyant device is pivotally connected, and a second guide for said valve stem situated below the valve.

5. In a flushing apparatus, in combination with a tank having a discharge pipe, a port leading to said discharge pipe, a fixed siphon,

the longer leg of which is in communication with said discharge pipe, a valve controlling said port, a stem connected with said valve and free for limited vertical movement, a buoy mounted on said stem and free for limited vertical movement with respect thereto, a stop connected with said stem and adapted to be encountered by said buoy, a pivotally supported buoyant device which normally depends in position to encounter and hold down said buoy but which may be floated out of said position, a bracket mounted on the siphon, said bracket including a guide for said valve stem, the said buoyant device being pivotally connected to said bracket, and means for limiting the vertical movement of the valve stem, such means comprising a cross bar secured in the upper end of the discharge pipe, the said cross bar serving also as a second guide for the said stem.

In testimony that I claim the foregoing as my invention I have hereunto signed my name this 15th day of July, A. D. 1901.

FREDERIC N. DIXON.

In presence of—

S. SALOME BROOKE,  
THOS. K. LANCASTER.