

No. 646,832.

Patented Apr. 3, 1900.

S. C. HOUGHTON.
FLUSHING APPARATUS.
(Application filed May 24, 1899.)

(No Model.)

Fig. 1.

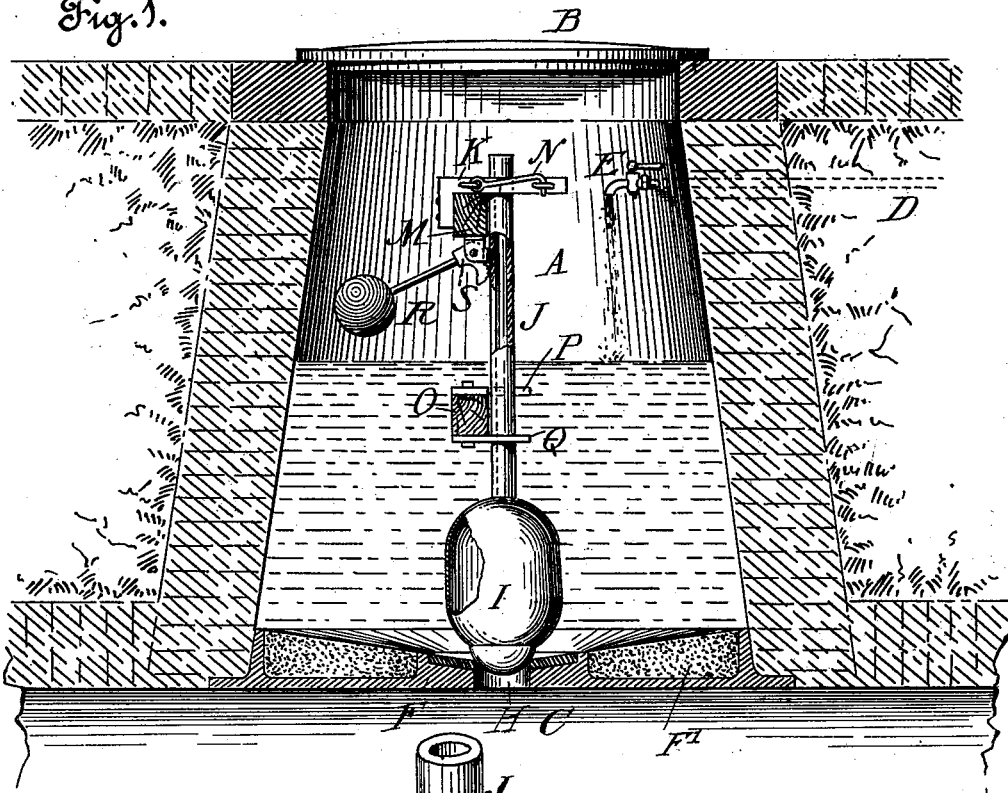


Fig. 2.

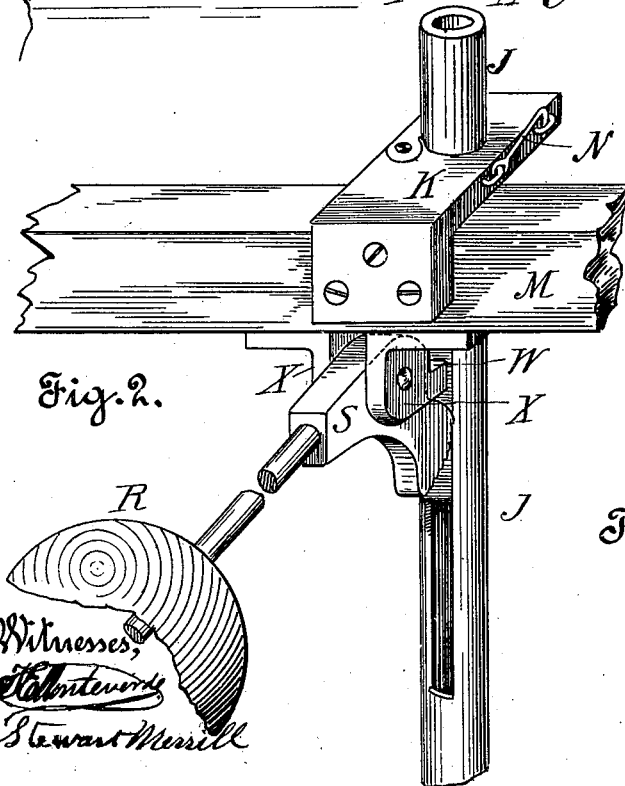
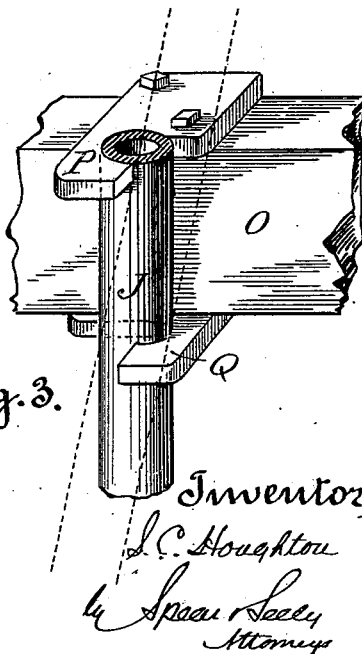


Fig. 3.



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UNITED STATES PATENT OFFICE.

STEPHEN CHASE HOUGHTON, OF SAN FRANCISCO, CALIFORNIA.

FLUSHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 646,832, dated April 3, 1900.

Application filed May 24, 1899. Serial No. 718,021. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN CHASE HOUGHTON, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Flushing Apparatus, of which the following is a specification.

My invention relates to apparatus for flushing sewers, drains, and like conduits, and it belongs to that type of apparatus in this class in which a quantity of water is allowed to accumulate in a tank or well communicating with the passage to be flushed and upon attaining a certain height is automatically discharged in full volume through a valve-opening, the valve after the discharge automatically reseating itself and permitting a further accumulation of water.

The object of my invention is to provide a cheap and simple apparatus capable of being easily adjusted and removed and also to furnish means for supporting it in such a way that free access can be had to the tank or well and to the passage to be flushed for cleaning, repairs, and inspection.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a vertical section of a well or tank containing my apparatus. Fig. 2 is a perspective view of a supporting-bracket bearing the catch for holding seated the buoyant discharge-valve and of the float for disengaging such catch. Fig. 3 is a detail perspective of the lower guides for the valve-rod, showing in dotted lines the manner of disengaging such rod when removing the valve and rod for any purpose.

A represents a tank or well having a removable cover B and placed in any suitable location, so as to communicate at the bottom with the sewer, drain, or other conduit C. This tank may be of masonry, brick, metal, or any suitable material and is designed to contain a considerable quantity of water.

I have shown as a water-supply a pipe D, having a cock E, by means of which the supply is regulated. The frequency of the flushing operation can be controlled by regulating the supply of water.

At the bottom of the well is a floor F, which may be made of wood or metal and may be

provided with a concrete filling F'. Where desirable, as in the case of a sewer-manhole, this floor may be movable or removable wholly or partly in order to give access to the sewer.

In the floor is made a discharge-aperture H, which is opened and closed by a buoyant valve I. The aperture must be large enough to discharge the volume of water as quickly as is required to effectively flush the sewer. The valve may be a hollow sphere or cylinder made of copper or other suitable material and has secured to it a rod J. Its tendency is to rise when water is in the tank. Near its upper end the rod J is guided through a plate K. This plate is in two parts, hinged together, and secured to a bracket M in the tank structure. The movable part of the plate K is normally secured to the fixed part by a hasp N. This plate is a guide which embraces the rod, Fig. 2, but loosely enough to allow it the required freedom of motion. I prefer to interpose another guide-bracket O a little distance above the valve-seat to keep the rod J and valve in proper line, so that the valve shall accurately reseat itself in the discharge-opening. Where a comparatively-long cylinder is used as a buoyant valve, these guides will bear upon the cylinder in the same manner as upon the rod J, as shown. The bracket O has two guides P and Q, which, located, respectively, above and below the bracket, bear oppositely upon the rod J. Where these guides bear upon the rod J, they act as a stop to limit the upward movement of the valve. Where the valve itself is vertically guided, a projection upon its exterior surface at a proper distance below the guides can be made to act as a stop. It will be evident that to remove the rod and valve it is only necessary to disengage the hasp N, swing the movable part of plate K outwardly, releasing the upper end of the rod, and then incline the rod enough to disengage it sidewise from between the guides P and Q.

I have stated that the tendency of the buoyant valve I is to rise. This tendency is restrained while the tank is filling by an automatic locking device, (shown in Fig. 2,) and which is also automatically disengaged to permit the valve to reseat itself. A float R is secured to one arm of a bent lever S, pivoted to the bracket M. The other or inner arm of

the lever bears upon the rod J and may be serrated in order to insure a firm hold. I have shown the part of the rod J on which the lever bears as flattened and a portion of the rod beneath the flattened part as cut away in order to prevent friction during the greater part of the upward and downward movement of the rod. The float is prevented from dropping too far by a stop W at the back part of the ears X X, between which the lever S is pivoted. This stop is, however, not essential and when used is only a final precaution in case the frictional contact should fail. The weight of the float when operating as a lock keeps the inner end of the lever in contact with the rod J and is so arranged as to prevent upward movement of the rod, while permitting its free downward movement.

In the operation of my apparatus the water supplied to the tank accumulates until it has risen to the float R and lifts the latter. The engaged end of the lever being only held by the weight of the float is at once disengaged, freeing the rod J. The buoyant valve I immediately rises from its seat and all, or nearly all, of the volume of water pours out of the discharge-opening H. The valve I immediately reseats itself and in doing so draws the rod J downward and causes it to engage the lever S, locking the valve in closed position. As soon as the water-level has fallen below the float the latter by its own gravity has caused the inner end of the lever to bear on the rod J in readiness for engagement therewith.

As before explained, access to the sewer is very easy and convenient, since the valve and rod can be easily removed and the floor, if movable, raised from its place, exposing a large opening into the sewer.

The parts of my device are few and those few simple in construction, cheap to manufacture, and not liable to get out of repair, and the device in operation contains but a single movable part.

I do not limit myself to details of construction herein described and shown, as I desire to avail myself of such modifications and equivalents as fall properly within the spirit of my invention.

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

1. An automatic flushing apparatus, comprising a well or tank having a discharge-opening, normally closed by a buoyant valve, a locking device for keeping said valve closed, a water-supply for the tank, and means operated by the accumulation of water in the tank for disengaging said locking device, and permitting the buoyant valve to unseat itself.

2. A flushing apparatus, comprising a well,

or tank, having a discharge-opening, normally closed by a buoyant valve, a locking device for keeping said valve closed, a water-supply for the tank, means operated by the accumulation of water in the tank for disengaging said locking device and permitting the buoyant valve to rise, and means for automatically reengaging said lock when the valve reseats itself.

3. In a flushing apparatus, and in combination with a well or tank, having a water-supply, a discharge-passage, a buoyant valve for closing the same, a locking device for keeping said valve seated, and a movable float connected to said locking device; whereby accumulated water acting on the float will disengage the locking device, and permit the buoyant valve to unseat itself and the said water to escape, and whereby, further, the gravity of the unsupported float causes the reengagement of the locking device when the buoyant valve has reseated itself.

4. In a flushing apparatus, and in combination, a well or tank having a discharge-opening in its bottom, a buoyant valve for closing and exposing said opening, a valve rod or stem secured to said valve, a lever adapted to engage and lock said rod, and a float connected to said lever for controlling its engagement with and disengagement from said rod.

5. In a flushing apparatus, and in combination, a well or tank, having a discharge-opening, a valve for such opening, having a vertical rod, a separable guide for said rod, near its upper end, and a pair of intermediate guides located out of vertical line with each other, so as to bear upon different sides of the rod or valve, whereby the said rod and valve can be bodily removed by separating the upper guide and inclining the rod to register with the space between the two intermediate guides.

6. In a flushing apparatus, the combination with a well or tank of a vertically-movable buoyant valve, a discharge-opening from the tank, a valve-rod, a bracket provided with guides for said valve-rod, a lever pivoted to said bracket and provided with means for locking said rod, and for releasing the lock, and a water-supply for the tank, adapted to accumulate therein and to first operate the lock-releasing device so that the valve, in the presence of said water, can then rise by its own buoyancy.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 25th day of April, 1899.

STEPHEN CHASE HOUGHTON.

Witnesses:

L. W. SEELY,
FANNY BURT.