May 25, 1926. 1,586,079

F. FORMANECK

WATER CLOSET FLUSHING MEANS OF COMPRESSED ENERGY TYPE

Filed April 22, 1924

Fig. 1.

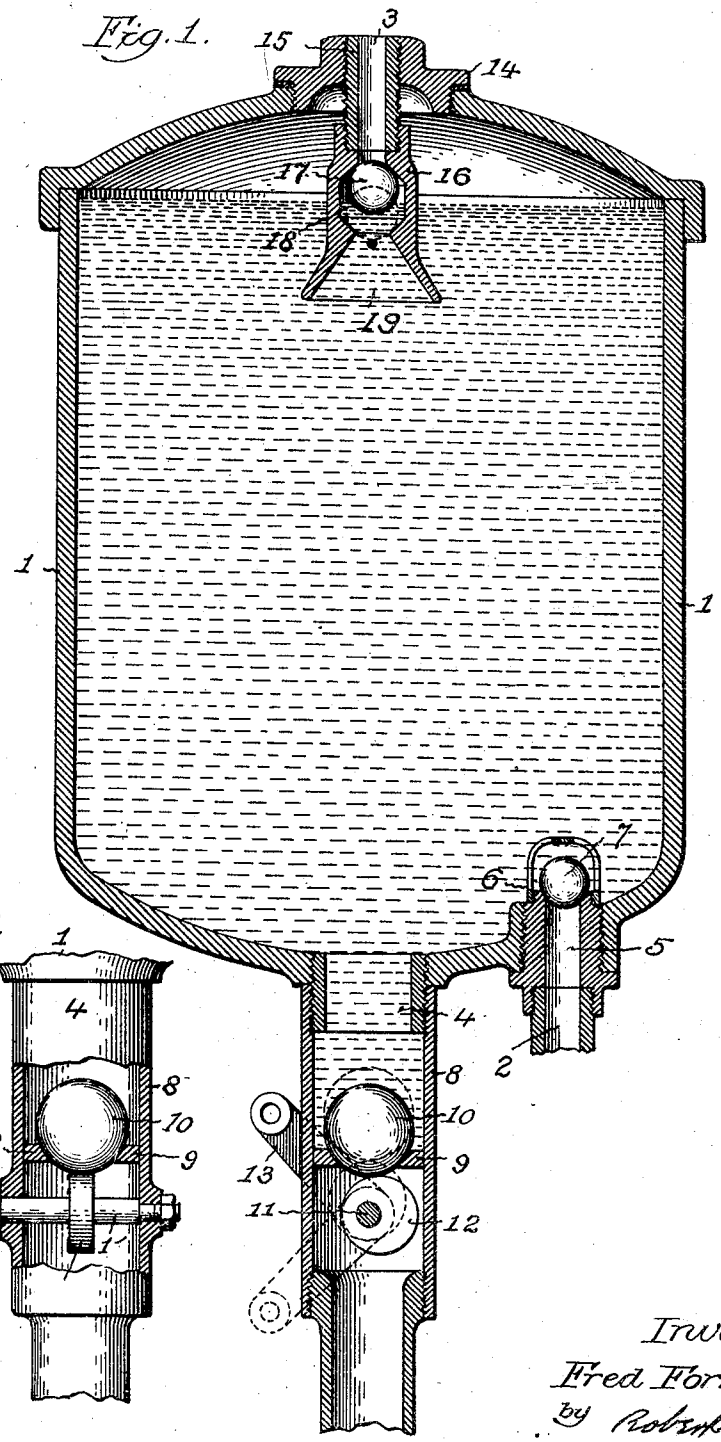


Fig. 2.

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Patented May 25, 1926. 1,586,079

UNITED STATES PATENT OFFICE.

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WATER-CLOSET-FLUSHING MEANS OF COMPRESSED ENERGY TYPE.

Application filed April 22, 1924. Serial No. 708,123.

This invention relates to flushing apparatus of compressed energy type for water closets in which a closed tank receives a supply of water from a city main or other usual source of supply, with such supply held under pressure of a contained body of air in the tank, to be forcibly discharged into a water closet bowl on the opening of a valve associated with the outlet from the bottom head of the tank. And the present improvement has for its various objects:—

To provide a simple, durable and efficient structural formation and combination of parts and features of the valve controlling the outlet from the bottom head of the closed tank above referred to.

To provide a like simple and effective automatic controlling valve for the usual air vent or opening at the top of the aforesaid tank, all as will hereinafter more fully appear.

In the accompanying drawing:—

Fig. 1, is a central sectional elevation of the flushing tank of a water closet having the present invention applied.

Fig. 2, is a detail elevation, with parts broken away and in section, of the outlet valve and its operating mechanism, the view being in a plane at right angles to that of Fig. 1.

Like reference numerals indicate like parts in the different views.

The flushing tank 1, of the present apparatus, is of any usual closed formation, having a straightway water supply passage or pipe 2 near its bottom adapted to introduce a supply of water to the tank 1 from a city main or other usual source of supply.

The tank 1 is also provided with an inlet-outlet or vent pipe or passage 3 at top, and with a water outlet pipe or passage 4 at bottom, with such pipe 4 having the usual flushing connection with the bowl of a water closet. The arrangement described being usual to the present type of flushing apparatus.

In the construction shown the water inlet pipe 2 has attachment to a bushing 5 fitted to an orifice in the bottom head of the tank 1, with said bushing provided at its upper end with a valve seat, and a holding cage 6, for a movable valve member 7 of a spherical form and having free movement in said cage. The purpose of this construction is to prevent a reflux of the water under compression in the tank 1, when from any reason the pressure in the water supply pipe 2 or in the city main, drops below the normal pressure.

In the present improvement, the water outlet valve of the apparatus comprises a hollow cylindrical valve casing or plain shell 8 interposed in the water outlet pipe or passage 4 aforesaid, and provided with a plain transverse partition 9, which in turn is formed with a central opening or valve seat. The movable valve 10 associated with said valve seat is of a spherical shape, loosely arranged above the partition 9 and provided with operating means as follows:

A rock shaft 11, is journalled transversely in the cylindrical valve casing 8, and carries within the lower compartment of said valve casing, a cam or eccentric 12 adapted for direct operative engagement with the lower part of the spherical valve 10 to effect a positive shift and upward lift or opening movement of the same in the operation of the apparatus to attain a frictional turning movement of the spherical valve 10. Exterior of the valve casing, the rock shaft 11 is provided with an operating arm 13 adapted for operative connection with either an ordinary pull chain or with the usual automatic mechanism which is controlled by the movement of a water closet seat.

In the present improvement the valve controlling the inlet-outlet pipe or passage 3, at the top of the tank 1, comprises an externally screw threaded nipple 15 having engagement at its upper end with a bushing 14 fitting a central orifice in the upper head of the tank 1. The lower end of the nipple 15 affords means for attachment of a valve casing 16 formed as follows:—

The valve casing 16 is formed with a holding cavity 18 for the reception of a loosely arranged spherical valve 17 adapted to close upwardly and seat itself upon a valve seat formed in the upper part of the valve casing 16 as shown. A material feature of this part of the improvement consists in the formation of the lower end of the valve casing 16 with a depending funnel shape skirt 19 adapted to direct the air or water contained in the tank 1 in a very effective manner against the underside of the valve 17, to attain a closing movement of the same at the proper period in the operation of the apparatus. The regulation of such valve closing period is initially effected by imparting the proper length

to the intermediate tubular member 15, with a consequent vertical location of the valve casing 16 at a predetermined distance from the top head of the tank 1, such construction affording an easy and economical means to meet normal city water pressure at different points and locations by a greater or a less dependence of the valve casing 16 in the interior of the tank 1, with a consequent confinement of a greater or a less body of air to effect a subsequent forcible discharge of the body of flushing water.

In the particular construction shown, the spherical valve member 17 is of the semi-elastic type adapting the same to be forced into the interior of the casing 18 through the smaller lower passage of casing, this being an ordinary procedure in check valve structures.

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

In a water closet flushing means of the type described, the combination of a closed tank having an inlet-outlet orifice at top, a bushing fitting said orifice, an externally screw threaded nipple fitting said bushing and depending into said tank, a valve casing attached to the lower end of said nipple and formed with an intermediate holding cavity having a funnel shaped skirt beneath the cavity and a spherical valve in said cavity and free to move therein, the skirt being adapted to direct the contained air or water against the under side of the valve.

Signed at Chicago, Illinois this 11th day of April 1924.

FRED FORMANECK.