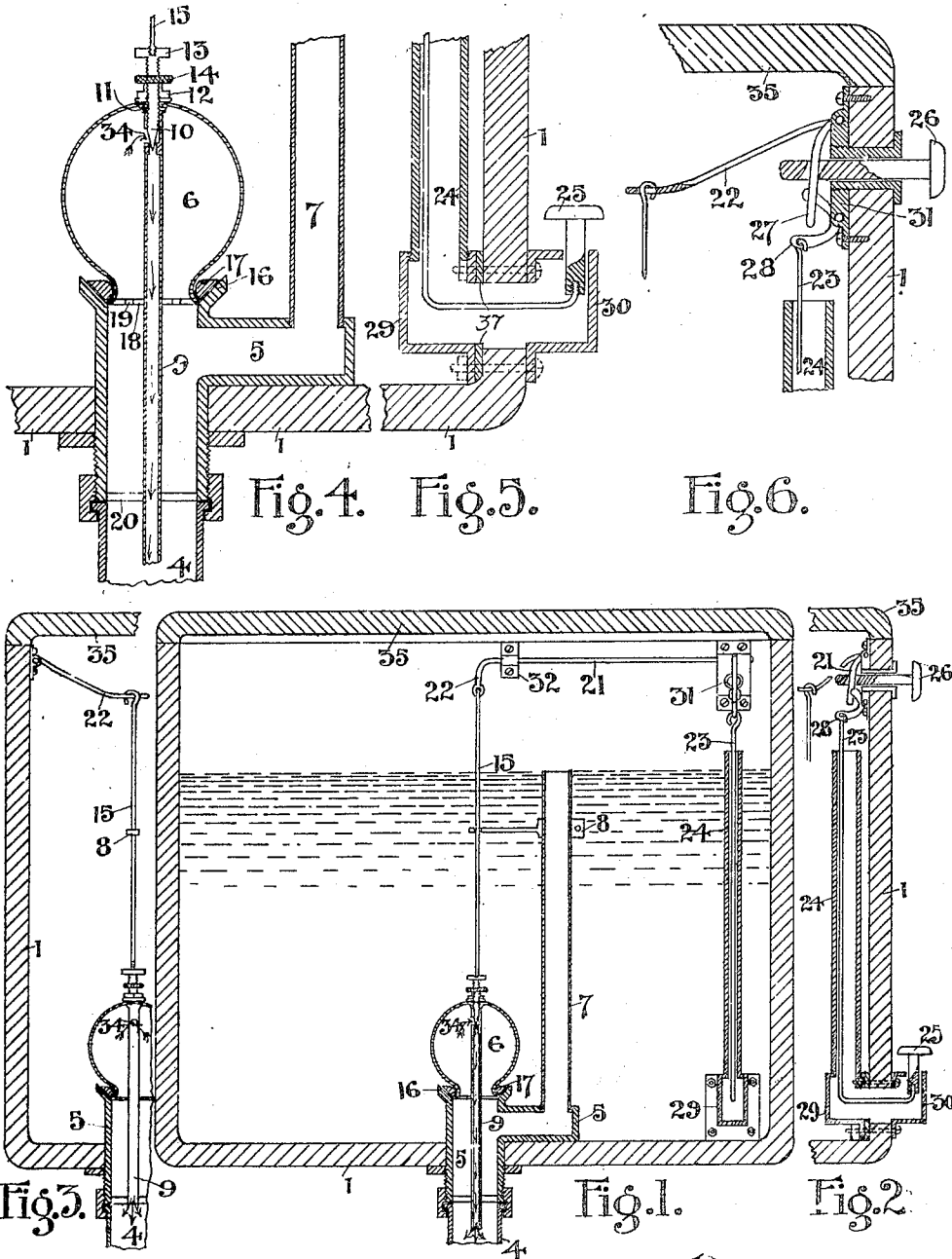


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APPLICATION FILED APR. 13, 1905.

914,067.

Patented Mar. 2, 1909.

2 SHEETS—SHEET 1.



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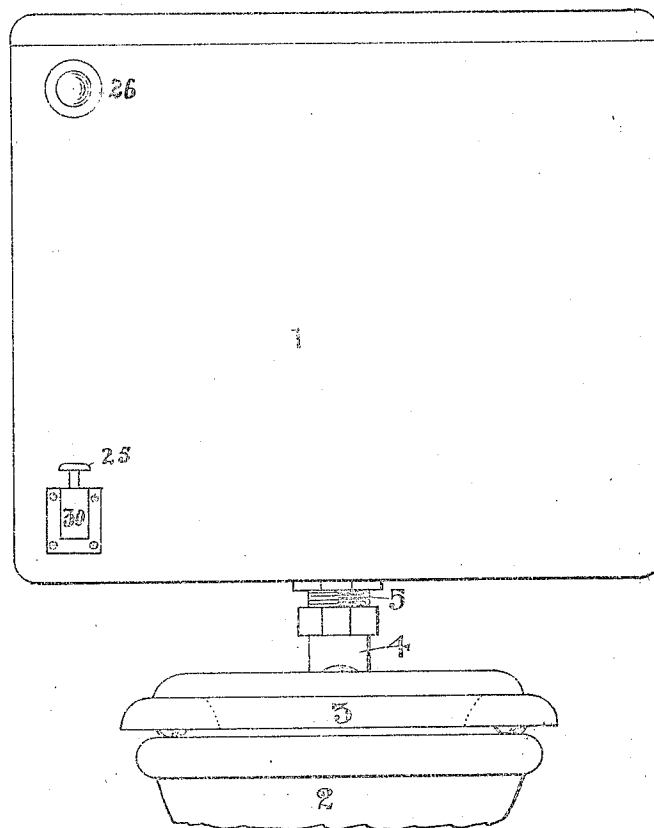


Fig. 7.

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UNITED STATES PATENT OFFICE.

WILLIAM H. OSBORN, OF LOUISVILLE, KENTUCKY.

WATER-CLOSET FLUSHING APPARATUS.

No. 914,087.

Specification of Letters Patent.

Patented March 2, 1909.

Application filed April 13, 1905. Serial No. 255,467.

To all whom it may concern:

Be it known that I, WILLIAM H. OSBORN, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Water-Closet Flushing Apparatus, of which the following is a specification.

My invention relates especially to water closets which have a low-down water tank and an opening in the bottom of this tank provided with a hollow, floating valve; and the objects of my improvement are, simplicity and cheapness of construction, to provide means for controlling and predetermining the quantity of water employed in each flush, facility of adjustment, compactness, placing all working parts within the tank and thus protecting them from tampering, and to provide convenient means in flushing apparatus of this class for operating either while sitting or standing. These objects I attain by means of the mechanism illustrated in the accompanying drawing, in which—

Figure 1 is a vertical sectional view; Figs. 2, 3, 4, 5, and 6 are detail sectional views; and, Fig. 7, a front elevation.

1 represents the ordinary low-down tank, preferably made of cast iron and enameled; 2 represents the ordinary closet bowl; 3 is the seat; 4 is the flush pipe; 5 is a valve casting, which has integral therewith the valve seat 16 and a branch by means of which over-flow pipe 7 communicates with the flush pipe and into the top of which said over-flow pipe is screwed; 6 represents the usual hollow valve; 8 is a guide-bracket clamped onto the upper end of over-flow pipe 7 and adapted to guide the valve stem 15, which passes through a perforation in the outer end thereof; 9 is an air tube which extends into valve 6 and downward into the flush pipe; 10 is a needle valve which is threaded and screwed into the upper end of the air tube 9 and adapted to work in a valve seat to regulate the admission of air through perforation 34 in the air tube. Air tube 9 is provided at its upper end with a flange, 11, adapted to press against the inside of the top of valve 6, and the upper end of the air tube 9 is externally threaded, and a nut, 12, secured thereon in order to make an air tight and water tight joint where said air tube passes through the top of the valve. The upper end of needle valve 10 is provided with a knurled head, 13,

and, just under this head, with a knurled jam-nut, 14, so that the adjustment of needle valve 13 may be securely set when in the proper position.

To the upper end of needle valve 10 is secured a valve stem 15, which passes up through the perforation in guide bracket 8, and is operatively connected at its upper end, by means of a hook formed thereon, with a right-angular extension, 22, of a rock-shaft, 21. The rock-shaft 21 is mounted in brackets 31 and 32 and has at the end opposite the said right-angular extension a second right-angular extension, 27. In the path of extension 27 is placed the stem of a push button, 26, which passes through a perforation in the upper portion of the front wall of the tank. This stem is preferably slotted near its end, and extension 27 loosely passed through the slot. Just below the stem of push button 26 and pivoted in bracket 31 is a bell-crank lever, 28, which has its upper leg forked and bifurcated and thus adapted to engage the end of extension 27. The lower leg of lever 28 is provided with a perforation through which is operatively secured the upper end of a pull-rod, 23.

Near the lower edge of the front of the wall of tank 1 is a perforation through the wall which is covered on the inside of the tank by a cast metal box, 29, and on the outside by a similar box, 30. The boxes 29 and 30 are secured to the inside and outside of the tank, respectively, by means of bolts, and the joint between box 29 and the inner surface of the tank is sealed by means of a gasket, 37. Into the top of the box 29 is screwed a tube, 24, which extends upward along the inside of the front wall of the tank so that its top is somewhat above the top of the overflow tube 7, and, therefore, always above the surface of the water. This arrangement prevents the water escaping through box 30. Box 30 is provided at its top with a perforation adapted to receive the stem of a vertical push button, 25. The pull rod 23 passes down through tube 24 into box 29, through the perforation in the lower part of the wall of the tank, and has secured to it the stem of push button 25. The tank is covered securely by means of a lid 35, preferably made of cast iron and enameled.

The valve-casting 5 is provided at its

lower opening with a guide-spider, 36, adapted to guide air tube 9, which, being rigidly secured in valve 6, forms a guide therefor, to make it seat centrally and properly.

The operation of my improved flushing apparatus will now be understood. When valve 6 is seated, the water, admitted by any suitable valve into tank 1, accumulates and rises till it is shut off by means of the ordinary float and valve. If the supply is in excess, it over-flows through tube 7. Valve 6 is now filled with air. If push button 26 is operated, rock-shaft 21 will be actuated through extension 27, and extension 22 will pull valve stem 15 upward. This raises valve 6 off its seat, 16, and allows the water to flow through flush-pipe 4. The same will occur if push button 25 is pushed downward, when lever 28 will be operated by pull rod 23 and actuate extension 27. Either push button, 26 or 25, may be operated independently of the other. When valve 6 is raised from its seat it floats in the water in the tank on account of the air within it. But the water now begins to enter perforations 19 in the bottom, 18, of the valve and expels the air gradually through perforation 34 and downward through air tube 9. The water, rushing through flush pipe 4, has a tendency, also, to draw the air out of valve 6. As the water rises in valve 6, the valve becomes heavier, and, when its buoyancy is overcome, it sinks downward and seats itself, thus stopping the flush. When valve 6 is seated, the water within it runs out through perforations 19, and air enters, preparing the valve for the next flushing operation. It will be understood that the escape of the air may be regulated by means of needle valve 10 so that the valve will be set to seat itself when a predetermined amount of water has flown through flush-pipe 4, or in other words, the time of suspension of valve 6 may be regulated by regulating the escape of air therefrom by means of needle valve 10. The amount of the flush, therefore, is not determined by the size of the tank or the quantity of water in the tank, but by the valve and, therefore, two or more flushes may be had with one filling of the tank. By providing the two push buttons, 25 and 26, the flushing apparatus may be operated either in a standing or sitting posture, or the upper button, 26, may be operated with the shoulder while sitting, or the lower one may be operated by hand. By the arrangement of the boxes 29 and 30 and tube 24, this apparatus is especially adapted for use with cast tanks which are more durable than the usual wooden and sheet metal tanks and require no lining.

Having thus described my invention so that any one skilled in the art pertaining

thereto may make it, and any one may operate it, what I claim as new and desire to secure by Letters Patent of the United States is—

1. In apparatus for flushing water closets, a tank, provided with an opening in the bottom, a flush-pipe in said opening, and a hollow flushing-valve provided with an air-tube pendent from the top of said hollow flushing-valve and extending and discharging into the flush-pipe, and adjustable means for the escape of air into said pendent air-tube, substantially as specified.

2. In apparatus for flushing water closets, a water-tank provided with an opening in the bottom, a flush-pipe in said opening, a hollow flushing-valve provided with a tube for the escape of air through its bottom, a needle valve in the top of said hollow flushing-valve, a stem attached to the top of said needle valve, an upper horizontal and a lower vertical push-button on the outside of the front of said tank operatively connected with said flushing-valve, substantially as specified.

3. In apparatus for flushing water closets, the combination of a water-tank provided with an opening in its bottom and an opening in the lower part of its front wall, a casting provided with a valve-seat, a horizontal branch and an opening in the top of said branch, fitted in said opening in the bottom of said tank, an over-flow tube fitted into said opening in the top of said branch, a hollow valve closed at its top and provided with a tube for the escape of air into the flush-pipe, a needle valve in the summit of said valve, a stem attached to said needle valve, a rock-shaft operatively connected with said stem, a horizontal push-button on the upper part of the front of said water-tank operatively connected with said rock-shaft, a box sealed over said opening in the front wall of the tank, a vertical tube in the top of said box and extending above the water-line, an outside box over said opening in the front wall of the tank, a pull-rod within said vertical tube and extending through said opening in the front wall of the tank and operatively connected with said rock-shaft, and a vertical push-button in the top of said outside box and secured to said pull-rod, substantially as specified.

4. In apparatus for flushing water closets, a cast tank without lining provided with an upper and a lower opening in its front wall, a hollow flushing-valve, a horizontal upper push-button and a lower vertical push-button operatively connected with said flushing-valve through said upper and lower openings, a box attached to the inner surface of the front wall of said tank and sealed by a gasket, a vertical pull-rod tube sealed in the top of said box, and a corresponding outside box, substantially as specified.

5. In apparatus for flushing water closets, 130

the combination of a water-tank provided with an opening in the lower part of its front wall, a flushing-valve, a vertically operating push-button on the lower part of the front of said water-tank, an outside box over the opening in the lower part of the front wall of said water-tank, an inside box sealed water-tight over the opening in the lower part of the front wall of said water-tank, a vertical tube sealed water-tight in the top of said inside box, and means for operatively connecting said push-button with said flushing-valve.

d. In apparatus for flushing water closets, the combination of an open tank, provided with an opening below the water-line, a valve-operating rod, a box sealed water-tight on the inside of said tank over said opening in the wall for accommodating said valve-operating rod, and a tube sealed water-tight in said box extending above the water-line in which said valve-operating rod is loosely mounted, substantially as specified.

7. In apparatus for flushing water closets, the combination of a water-tank, a flushing-valve, and means for operating said flushing-valve from the outside of said water-tank comprising a lower push-button disposed below the water-line, and an upper push-button disposed above the water-line a pull rod, a bell-crank lever, a slotted stem on said upper push-button, a rock-shaft passing through said slotted stem and extending into operative engagement with said bell-crank lever, substantially as specified.

8. In apparatus for flushing water closets, a tank, a flush-pipe, a buoyant flush-valve provided with adjustable means for discharging the air of buoyancy through said flush-pipe comprising a tube depending and opening into the flush-pipe.

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