July 16, 1940. C. W. SHARP ET AL 2,208,281

FLUSHING APPARATUS

Filed Nov. 3, 1938

Fig. 1.

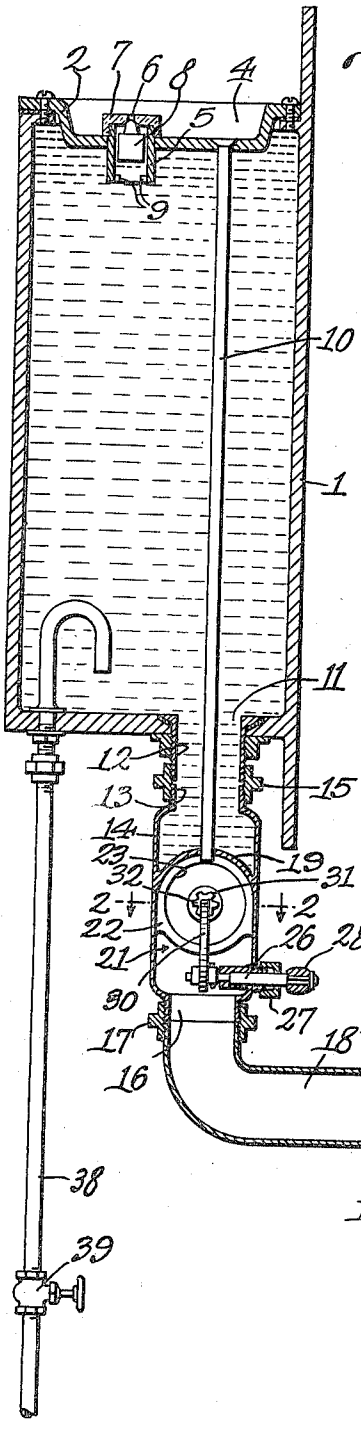


Fig. 3.

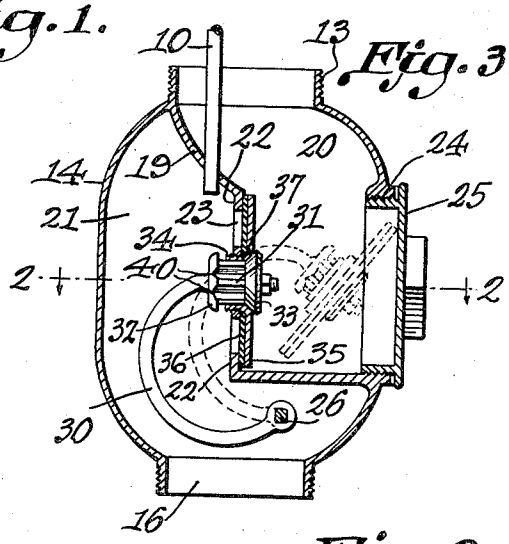
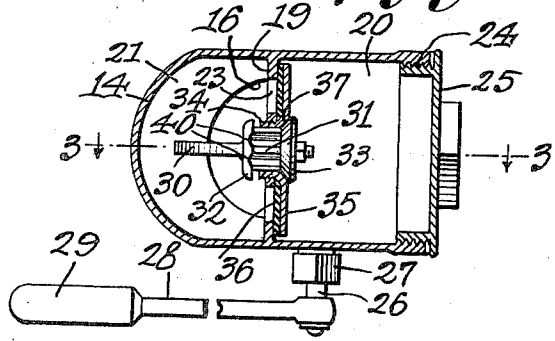
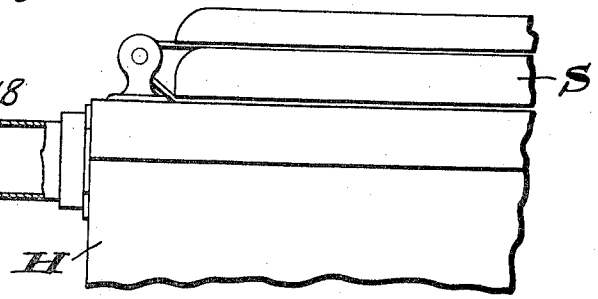


Fig. 2.





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FLUSHING APPARATUS

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Application November 3, 1938, Serial No. 238,668

2 Claims. (Cl. 4—26)

This invention relates to flushing apparatus designed primarily for use in connection with toilets, one of the objects being to provide a durable, efficient and noiseless apparatus of this character in which the mechanism is reduced to the minimum.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawing the preferred form of the invention has been shown.

In said drawing

Figure 1 is a vertical section through the apparatus, a portion of the toilet hopper to which it is connected being shown in elevation.

Figure 2 is an enlarged section on line 2—2, Figure 1.

Figure 3 is a section through the flush valve and its housing, said section being taken on the line 3—3, Figure 2.

Referring to the figures by characters of reference 1 designates a tank of sufficient strength to hold water under normal city pressure and this tank is closed at the top by a detachable cover 2 providing a sealing connection therewith by the use of an interposed gasket 3. This removable top 2 is preferably recessed as at 4 and opening through the top and into the recess is a small valve casing 5 having an outlet 6 in a cap 7 at the top thereof, this outlet being adapted to be closed tightly by a small float valve 8 slidably mounted within the tubular casing 5 and held against gravitation therefrom by suitably arranged stops 9. A drain tube 10 is extended downwardly within tank 1 from the bottom of the recess 4.

Tank 1 is provided in its bottom with an outlet opening 11 and secured within this opening is an outlet nipple 12 to which is joined the upper end 13 of a valve casing 14, the two parts being connected in any suitable manner, as by means of a union or sleeve 15.

Valve casing 14 is provided with an outlet 16 at its lower end coupled as at 17 to an outlet pipe 18 which opens into the hopper H or other structure to be flushed.

Formed within the valve casing 14 is a partition 19 which extends between inlet 13 and outlet 16 so as to form two chambers, namely, an inlet chamber 20 and an outlet chamber 21. An intermediate portion of this partition is flat, as indicated at 22 and is extended longitudinally of the valve casing. This flat portion is formed with a large port 23 which is located in line with a clean-out opening 24 in the valve casing, said clean-out opening being normally closed by a screw plug 25. The clean-out opening is preferably recessed on its inner side so as to provide a clearance for the purpose hereinafter set forth.

A spindle 26 is journalled in one of the walls of the outlet chamber 21 adjacent to outlet 16 and its bearing within the wall is suitably packed, as shown at 27 so as to prevent leakage. The outer end of this spindle is provided with an operating arm 28 having a handle 29 within convenient reach of the occupant of the seat S.

Secured to the inner end of spindle 26 so as to rotate therewith is an arcuate arm 30 the free end of which is provided with a longitudinally corrugated enlargement or head 31 having an annular flange 32 at one end thereof while at its other end there is provided a tapered pressure release valve 33. Slidable on head 31 is a short bearing sleeve 34 concentrically arranged on one face of a disk 35, said face being provided with a sealing disk 36 the diameter of which is greater than the diameter of opening 23 so that this disk and the disk 35, thus will serve as a main valve for closing the opening 23 when the disks are in one extreme position. Disk 35 is provided with a seat 37 adapted to be engaged by the release valve 33.

A water supply pipe 38 opens into the bottom portion of tank 1 and can be provided with the usual valve 39 for controlling the flow of water. The drain pipe 10 which extends downwardly from the cover 4 opens into the upper portion of chamber 21.

Arm 28 and its handle 29 acts as a weight for holding the arm 30 normally positioned as shown in Figure 3 at which time the release valve 33 is caused to press tightly against its seat 37 and, in turn, presses the main valve against the seat surrounding the opening 23. Thus communication between the compartments 20 and 21 is cut off and as water rises within tank 1 from pipe 38, air displaced thereby will escape through the vent 6 until the level of the water ultimately reaches a point where it will lift float 8 and cause it to seal the vent. A portion of the water thus supplied to the tank will of course fill the chamber 20 and the pressure of this water against the main valve will hold said valve as well as the release valve firmly to their respective seats. Should there be any leakage through the vent 6

from any cause, the water over-flowing into recess 4 would be drained through pipe 10 into chamber 21 and thence through outlet 16 and pipe 18 to the hopper H. When it is desired to operate the apparatus, the user pulls upwardly on handle 29. This causes spindle 26 to rotate with the result that the arcuate arm 30 moves head 31 longitudinally within sleeve 34 a sufficient distance to unseat the release valve 33. Thus pressure at the back of the main valve is relieved and some of the water in chamber 20 will be free to flow along the corrugations in the head and escape between flange 32 and the end of sleeve 34, it being noted that notches 40 are provided in the flange for this purpose. Following the opening of the release valve and the consequent release of pressure, continued actuation of the arm 30 in the same direction will result in flange 32 thrusting against sleeve 34 and pushing the main valve away from the opening 23 and into the position shown by broken lines in Figure 3. Thus the water trapped within the tank and chamber 20 will be free to rush outwardly through the exposed opening 23 into chamber 21 to outlet 16, pipe 18 and hopper H. The pressure of the on-rushing escaping water against the upper inclined surface of the main valve will tend to hold said valve pressed back into the recess within the screw plug 25 and maintain the handle 29 in its raised position. As soon as this pressure is relieved, however, the handle 29 and arm 28 will operate as a weight to swing the valves back to their normal positions whereupon the tank will be refilled and the parts thus all reset for a repetition of the operation already described.

What is claimed is:

1. The combination with a valve casing having a water inlet chamber and an outlet chamber, there being a partition separating said chambers and provided with a port, of a valve for closing the port and having an opening therethrough, a release valve for closing said opening, an arm pivotally mounted within the outlet chamber and connected to the release valve, said arm having means thereon for movably supporting and guiding the other valve, a handle connected to and movable with said arm and constituting a weight for holding the valve normally closed, said handle being shiftable from normal position to successively unseat the release valve and the other valve and to move with them into the inlet chamber, said arm being so proportioned as to support the valves, when open, in position to receive pressure from released water flowing to and through the port, thereby to maintain the valves open and the handle shifted until water pressure has been removed.

2. The combination with a valve casing having a water inlet chamber and an outlet chamber, said chambers being separated by a partition having a port, of a main valve normally closing the port, and having an aperture, a release valve normally closing the aperture, an arm pivotally mounted within the outlet compartment and having a longitudinally grooved head on which the main valve is slidably supported, means on the head and cooperating with the release valve for limiting the sliding movement of the main valve relative to the head, means outside of the casing for swinging the arm into the port to unseat the release valve and the main valve successively and to bring said valve into inclined position at a point spaced from the port thereby to receive pressure from water flowing to the port, said arm-actuating means constituting means for causing the valve to reseat when relieved from water pressure.

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