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DISPENSING APPARATUS FOR WATER CLOSETS AND THE LIKE

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Fig. 1.

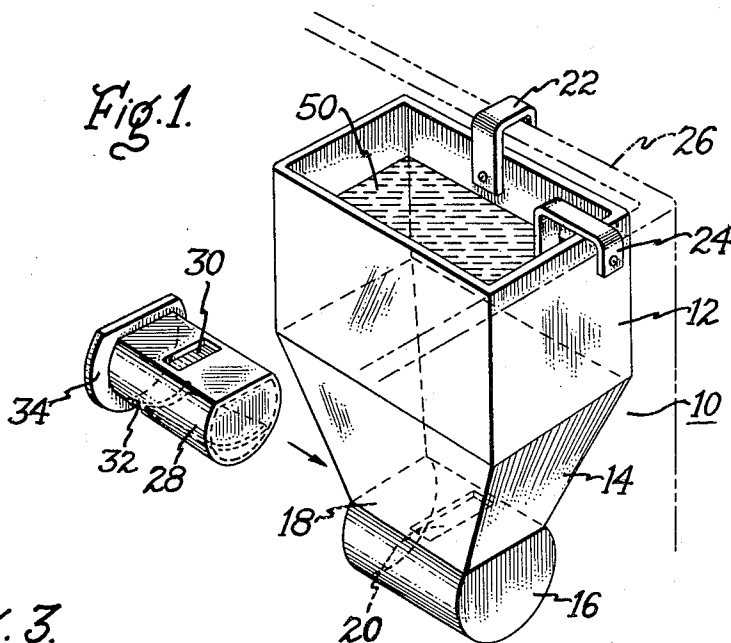


Fig. 3.

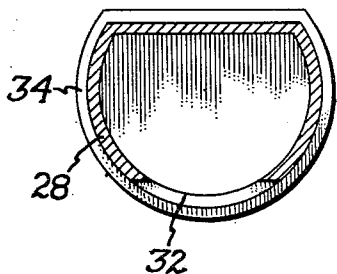
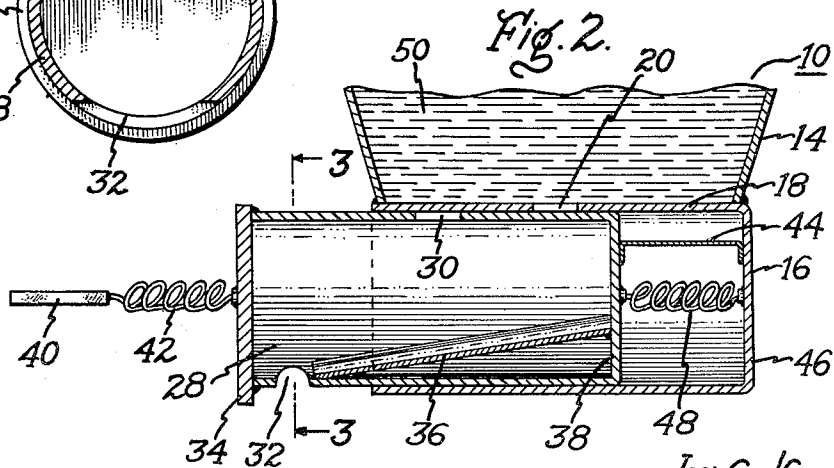


Fig. 2.



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DISPENSING APPARATUS FOR WATER CLOSETS AND THE LIKE

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1 Claim. (Cl. 222-181)

This invention relates to a dispensing apparatus and, more particularly, to a dispensing apparatus for dispensing a measured amount of cleaning solution or the like into a water closet or similar device.

As is well known to those familiar with the field of water closets and the like, it is necessary to periodically clean the bowl and related parts of such water closets. This is well recognized as a disagreeable task, especially to those who must perform such task. Clearly, it is desirable to provide a means for performing such task, preferably on a continuous basis, according to the use of such water closets. Of course, an obvious solution to such problem would be to provide a quantity of cleaning solution to the water closet after each use of the water closet.

A number of devices have been proposed which will function to provide a solution of any desired type to a water closet after each use of the water closet. However, many of these prior devices require a number of moving parts which make such device either too costly or require substantial maintenance to keep such devices in operative condition. Other proposed devices have been provided with fairly delicate operating mechanisms, which depend on certain conditions of the water closet for their operation, such as water pressure or the like. Clearly, such mechanisms cannot fulfill the need for a relatively simple, positively operated, and inexpensive dispensing apparatus for residential water closets. Further, those mechanisms which require maintenance, or have sensitive operating components cannot fulfill the clear need for a rugged, long lived, trouble-free dispensing apparatus for home use.

It is therefore an object of this invention to provide a rugged, dependable, low-cost dispensing apparatus for water closets and the like.

It is a further object of this invention to provide a dispensing apparatus that is positively actuated by the flushing mechanism of a water closet.

A still further object of this invention is to provide a dispensing apparatus for a water closet which has relatively few moving parts.

Another object of this invention is to provide a dispensing apparatus for a water closet that will positively dispense a measured amount of cleaning solution to such water closet after each use thereof.

In carrying out this invention in one form, a dispensing apparatus for a water closet or the like comprises a body member for holding a large supply of a cleaning solution. Means are provided on said body member for mounting such body member within a water closet. A valve member is provided, snugly fitting within said body member and having limited movement into and out of seating relation with said body member. Means are provided attached to a portion of said valve member and engageable with the flushing mechanism of the water closet to actuate said valve member for limited movement away from said body member. Restraining means are provided attached both to said valve member and said body member for restraining the movement of said valve member away from said body member. Resetting means are also provided between said valve member and said body member for returning said valve member into seating relation to said body member after a measured amount of solution has been dispensed to the water closet.

The invention which is desired to be protected will be particularly pointed out in the claim appended hereto.

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However, it is believed that this invention and the manner in which its objects and advantages are obtained, as well as other objects and advantages thereof, will be better understood from the following description, when taken in connection with the accompanying drawing in which:

FIGURE 1 is an exploded perspective view of one form of dispensing apparatus of this invention;

FIGURE 2 is a partial sectional view of the moving portions of the preferred form of the invention, showing the apparatus in dispensing position; and

FIGURE 3 is a sectional view of the preferred form of valve member, taken on the line 3-3 of FIGURE 2.

Referring now to the drawing, in which like numerals are used to indicate like parts throughout, the preferred embodiment of this invention is shown as a dispensing apparatus attachable to the upper rim of the tank of a water closet or the like. Referring now to FIGURE 1 of the drawing, the dispensing apparatus is shown as comprising a body member 10, having a rectangular upper portion 12, a tapered central portion 14 and a cylindrical lower portion 16. As can be seen, the lower cylindrical portion 16 is separated from the rest of the body member 10 by a bottom wall 18, the bottom wall being provided with a slot means 20 to provide communication between the lower portion 16 and the remainder of the body member 10, as will more clearly appear hereafter. The upper portion 12 of the body member 10 is provided with means for attaching the body member 10 to the tank of the water closet. In the preferred embodiment shown in FIGURE 1, these means take the form of U-shaped mounting brackets 22 and 24. As shown in FIGURE 1, the body member is mounted within the tank of a water closet, such tank being indicated by the phantom lines labeled 26.

To provide for dispensing of a measured amount of cleaning solution from the body member 10 a valve member 28 is provided, the valve member seating snugly within the lower cylindrical portion 16 of the body member 10 and being movable into and out of seating relation with the body member 10. The valve member 28 is preferably a closed hollow member, provided with an upper slot means 30, and a lower slot means 32. The end of the valve member is provided with an end plate 34 which acts as both a stop means and a sealing means when the valve member 28 is in non-dispensing relation with the body member 10.

In FIGURE 2 of the drawing the valve member 28 and the body member 10 are shown with the parts in dispensing relation. When the parts are in dispensing position, the slot means 32 of valve member 28 is clear of the body member 10 so as to dispense any solution that is in the hollow interior of the valve member 28. The valve member 28 is provided with a sloping internal wall 36, which slopes downwardly from the rear wall 38 of the valve member 28 to the slot means 32. As will be understood, the wall 36 ensures that all of the solution within the valve member 28 will be dispensed into the water closet or the like to which the dispensing apparatus of this invention is attached.

In order to obtain positive actuation of the dispensing apparatus of this invention an actuating means is connected to the valve member 28 and is adapted to be connected to the flushing mechanism of the water closet. As shown in FIGURE 2, the actuating means is in the form of a rod member 40 which is connected to the front wall or stop means 34 of the valve member 28 by means of a spring 42. The spring means 42 is provided so that a desired limited movement of the valve member 28 may be obtained without unduly limiting the action of the flushing mechanism of the water closet and without requiring any special type of adjusting means to attach the valve member to the flushing mechanism.

To prevent the valve member 28 from being moved too far out of the lower portion 16 of the body member 10, a restraining means is provided between the valve member 28 and the body member 10. The restraining means is preferably in the form of a flexible strap means 44 which is connected to the wall 38 of the valve member 28 and rear wall 46 of the lower portion 16 of the body member 10. As will be understood, the restraining means 44 is flexible so that as the valve member is seated within the lower portion 16, the flexible strap 44 will not interfere with such seating. Resetting means are also provided to return the valve member 28 to its seating or sealing relation with the lower portion 16 after the measured amount of cleaning solution has been dispensed. The resetting means may take the form of a spring means 48, which is placed in tension as the valve member is moved away from the body member 10, to thereby exert the desired returning force on the valve member 28 after the measured amount of cleaning solution has been dispensed.

It is believed that from the foregoing the operation of the dispensing apparatus will be clearly evident. As will be understood, the body member 10, comprising the upper portion 12 and the central portion 14 is filled with a supply of cleaning solution or the like, preferably in a liquid form as indicated at 50 in FIGURE 2. When the valve member 28 is seated within the lower portion 16 of the body member 10, slot means 30 of the valve member 28 will register with the slot means 20 in wall 18. With these slots aligned, the liquid solution 50 will freely enter into the hollow portion of the valve member 28. However, with valve member 28 seated within the lower portion 16, slot means 32 will be sealed against the cylindrical wall of the lower portion 16 and the end wall 34 of valve member 28 will be sealed against the lower portion 16, thus preventing the liquid from leaving the hollow portion of the valve member 28. As the flushing mechanism of the water closet is operated, rod member 40 will pull the valve member 28 away from the body member 10, and when the slot means 32 is clear of the lower portion 16, the liquid in the valve member will be dispensed into the water closet. As the valve member 28 moves outwardly, away from the body member 10, slot means 30 moves out of alignment with the slot means 20, thus preventing any of the liquid solution in the upper portion of the body member 10 from entering the valve member 28 as the liquid therein is dispensed through the slot 32. After the liquid in the valve has been dispensed, the resetting spring 48 will act to return the valve member 28 to seating relation with the body member 10, sealing the valve and refilling the hollow portion of such valve.

From the above it will be clear that there has been provided a simple, rugged dispensing apparatus, which fulfills all of the objects hereinbefore set forth. Of course it will be understood that the dispensing apparatus of this invention is not limited to the dispensing of cleaning solutions, but that any other desired material may be dis-

pensed by the novel apparatus of this invention. Further, it will be clear that this apparatus is not limited to the dispensing of liquids, since obviously, many types of solid granular material may also be dispensed, if desired.

While this invention has been described with relation to a preferred embodiment thereof, it will of course be understood that it is not limited thereto. Obviously, changes may be made in the shape or construction of the various parts of the dispensing apparatus without departing from the spirit and scope of this invention as defined in the appended claim.

What is claimed as new and which it is desired to secure by Letters Patent of the United States is:

A dispensing apparatus for dispensing a measured amount of a solution into the tank of a water closet comprising; a body member adapted to hold a supply of solution, mounting means on said body member for mounting said body member in the tank of a water closet, said body member being provided with a lower portion separated from said body member by a wall, said wall having a slot therein for communication between said body member and said lower portion, a valve member seating within said lower portion and movable out of said lower portion, said valve member being a closed hollow member having inner and outer end walls, a slot means in said valve member which is aligned with said first slot when said valve is in seating relation with said lower portion, said valve member having another slot means, said other slot means being in dispensing position when said valve member is moved out of seating relation with said lower portion, a sloping internal wall in said valve member sloping from said inner end wall to said other slot means to provide positive dispensing of a solution from said valve member, actuating means spring connected to said valve member and connectible to the flush mechanism of a water closet for moving said valve member out of seating relation with said lower portion, and resetting means for returning said valve member into seating relation with said lower portion, whereby when said valve member is in seating relation with said lower portion said valve member is charged with a measured amount of solution and when said valve member is moved out of seating relation with said lower portion said measured amount of solution is dispensed through said other slot means into the tank of a water closet.

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