Sept. 30, 1958 C. F. RATCLIFFE 2,853,715

AUTOMATIC DEODORANT DISPENSER FOR TOILETS

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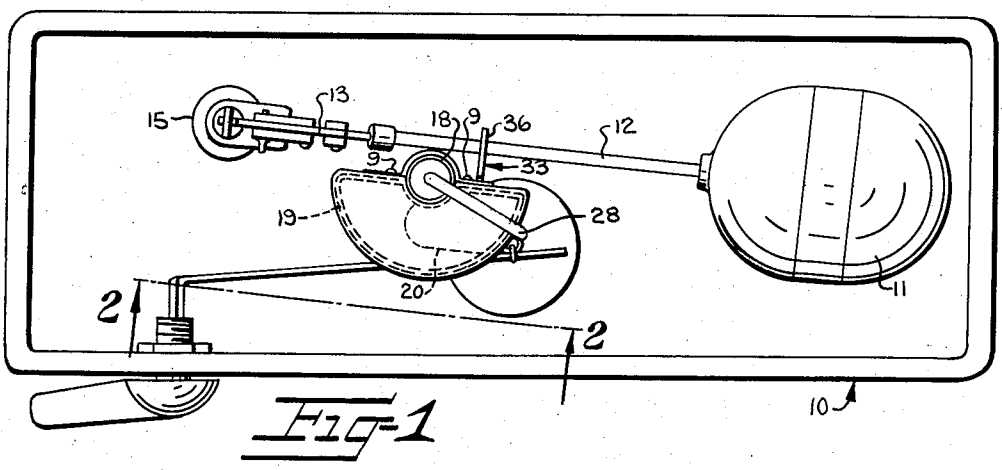



Fig-1

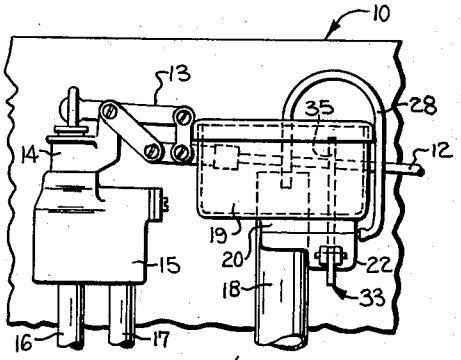



Fig-2

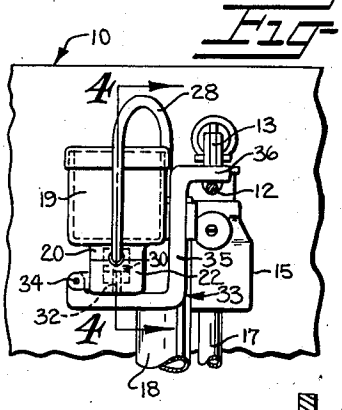



Fig-3

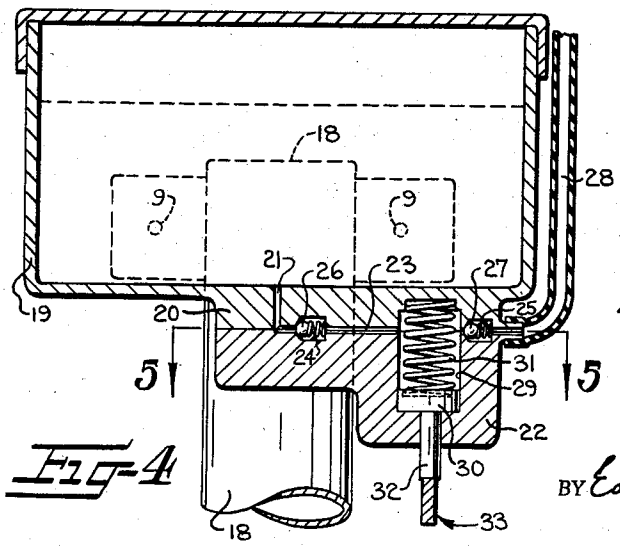



Fig-4

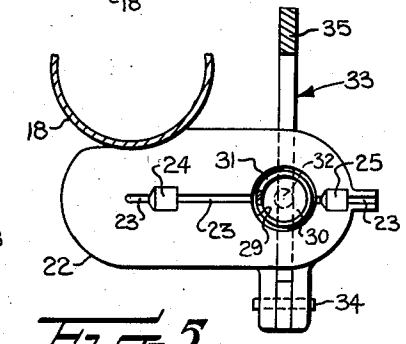



Fig-5

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# AUTOMATIC DEODORANT DISPENSER FOR TOILETS

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3 Claims. (Cl. 4—225)

This invention relates to sanitary toilet equipment and its object is to provide means for dispensing a minute quantity of liquid toilet deodorant through the overflow pipe of toilet flush box into the toilet bowl after each flushing of the toilet.

An object is to provide means for dispensing such deodorant with means for regulating the supply of deodorant dispensed.

Another object is to provide means of this character which will supply deodorant to the flush box following each flushing of the toilet.

A further object is to provide means of this character which may be readily adapted to conventional flush boxes and toilets.

Another object is to provide means of this character which are of relatively few parts which are simple and do not readily get out of order.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which—

Figure 1 is a top plan view of the invention showing it installed in a conventional flush box;

Figure 2 is a section taken on line 2—2 of Figure 1;

Figure 3 is a side view looking from the right in Figure 2;

Figure 4 is a section taken on line 4—4 of Figure 3;

Figure 5 is a section taken on line 5—5 of Figure 4.

The numeral 10 indicates a conventional flush box or tank which may be mounted on a conventional bowl, not shown. Inlets to the box are controlled by means of a float 11 mounted on a float arm or rod 12 which through linkage 13 operates an inlet valve 14 on a valve unit 15. Numeral 16 indicates the inlet from the house supply and 17 the outlet from the valve unit 15 into the flush box. This is conventional structure.

A conventional overflow pipe 18 is fixed in the bottom of the tank. A deodorant container is secured to the overflow pipe 18 within the tank. This container is a semi-cylindrical reservoir 19 which is vertically and adjustably secured on the overflow pipe 18 by means of a bracket and bolts 9. The deodorant container has a flat side which is provided in an intermediate portion with a semi-circular groove. This semi-circular groove receives a portion of the circumference of overflow pipe 18, as shown in Figure 1. The bracket has two oppositely extending flange portions with an intermediate curved portion of semi-circular cross-section. When fitted in place, the intermediate curved portion of the bracket encompasses the remaining portion of the circumference of overflow pipe 18. Bolts 9 extend through bolt holes formed in each flange portion of the bracket into the flat side wall of the deodorant container to secure the deodorant container to the overflow pipe. By loosening the bolts 9, the deodorant container may be vertically adjusted on the overflow pipe by sliding it upwardly or downwardly as desired, whereupon the bolts may then be tightened to again secure the deodorant container in



place on the overflow pipe. The bottom 20 of the deodorant reservoir is provided with an outlet port 21. An end portion 22 is suitably secured to the bottom portion 20 and this portion is provided with a passage 23 in which are provided valve chambers 24 and 25. Within the chambers 24 and 25 there are inlet and outlet valves 26 and 27, respectively, which may be spring seated as shown in Figure 4. The springs in the valve chambers 24 and 25 may be omitted, if desired, as the inlet and outlet valve chambers 24 and 25 and valves 26 and 27 therein are so arranged as to cause the valves to open and close as desired under pressure of the deodorant. An outlet pipe 28 extends from the passage 23 and is bent over to discharge deodorant into the overflow pipe 18.

A pump chamber 29 is provided partly in the bottom 20 of the deodorant chamber and partly in the end portion 22. A pump piston 30 is provided within the pump chamber and a spring 31 is positioned at the head of the piston to urge the piston to retracted position. Attached to the lower end of the piston is a piston rod 32. As is apparent, reciprocation of the piston within the cylinder will draw deodorant through the valve 26 and discharge it through the valve 27 into the outlet pipe 28. The inlet valve 26 and its chamber 24 are so arranged as to prevent flow of the deodorant back into the reservoir 19 on the pumping stroke, and the outlet valve 27 and its chamber 25 are so arranged as to prevent flow of the deodorant back into the pump chamber 29 from the outlet pipe 28 on the suction stroke. Thus, once filled, the lower portion of pipe 28 contains a constant charge of deodorant.

The deodorant reservoir may be adjusted vertically on the overflow pipe by loosening the bolts 9 to regulate the effective stroke of the piston so that a predetermined amount of deodorant may be discharged into the overflow pipe at each reciprocation of the piston. Means for operating the pump piston comprise a lever 33 which is pivotally attached at 34 to an ear or bracket on the member 22. The lever 33 depends from its pivotal connection 34 and then extends horizontally and then is bent upwardly into an upstanding arm 35 and then bent laterally again into an arm 36 which extends above the float arm 12.

From the foregoing description, it may be seen that the operation is as follows:

When the toilet is flushed the float 11 will descend and the spring 31 will move the piston 30 to the position shown in Figure 4, drawing deodorant into the pump chamber 29, and when the flush tank is filled the float will move up lifting the piston to discharge deodorant through the line 28 into the flush box. The float 11, as is apparent, will control inlet water through valve 14 and pipe 16 into the flush box. As will be apparent, the deodorant supplying pump will not deliver deodorant into the pipe 18 until after the flushing of the toilet. Consequently, the deodorant will be deposited in the toilet bowl where it will act as a deodorant and if desired perhaps as a sterilizing agent in the event that the deodorant contains germicidal material as well as a deodorizing material.

As will be apparent from the foregoing, there is provided a means for supplying deodorizing material to a toilet which is simple in operation, in structure and in installation.

In the drawings and specification there has been set forth a preferred embodiment of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. In a flush tank having an inlet valve for supplying water to the tank, an overflow pipe in the tank adapted to discharge water into a toilet bowl, a float in the tank for controlling the inlet valve, a rod connecting the float to and for operating the inlet valve, an improved deodorizing device comprising; a deodorant container attached to the overflow pipe, said deodorant container having a pump chamber in its bottom portion, an inlet passageway connecting the pump chamber with the interior of the deodorant container, an outlet passageway from the pump chamber to the overflow pipe, a piston in said pump chamber, movement of the piston in one direction serving to draw deodorant from the deodorant container into the pump chamber through said inlet passageway and movement of the piston in the opposite direction forcing deodorant from the pump chamber through said outlet passageway and into the overflow pipe, a piston rod on said piston extending below said deodorant container, a lever pivotally attached to the bottom of the deodorant container and in engagement with said piston rod, means on said lever engaging rod which operates the inlet valve to the flush tank, and means for adjusting the deodorant container vertically on said overflow pipe, whereby the lever by virtue of its engagement with said piston rod also adjusts the piston vertically within the pump chamber to change its effective stroke and consequently regulate the quantity of deodorant delivered to the overflow pipe.

2. In a flush tank having an inlet for supplying water to the tank, a float member connected by a float rod to valve means for controlling said supply inlet, and an overflow pipe for discharging water into a toilet bowl, an improved deodorizing dispenser means comprising; a deodorant reservoir secured to said overflow pipe, said reservoir having a pump chamber in its lower portion, said pump chamber communicating with said reservoir through an inlet passageway, a first check valve positioned in said inlet passageway, said pump chamber communicating with said overflow pipe through an outlet passageway, a second check valve positioned in said outlet passageway, a piston in said pump chamber and adapted to reciprocate therein, a spring normally urging the piston in one direction, linkage means connected to said piston and said float rod to move the piston in the opposite direction to compress the spring when the float rises in the tank, said first check valve being opened upon movement of the piston in one direction to admit deodorant from said reservoir into said pump chamber, and said second check valve being opened to pass the deodorant from said pump chamber to the overflow pipe when the piston moves in the opposite direction within the chamber, and means for adjusting the deodorant reservoir vertically on said overflow pipe to vary the effective stroke of the piston within the chamber, whereby the quantity of deodorant delivered into the overflow pipe may be regulated as desired.



3. In a flush tank having an inlet for supplying water to the tank, a float member connected by a float rod to valve means for controlling said supply inlet, and an overflow pipe for discharging water into a toilet bowl, an improved deodorizing dispenser means comprising; a deodorant reservoir, said deodorant reservoir being provided with a semi-circular groove on one side, a portion of the circumference of said overflow pipe fitting within said semi-circular groove, a bracket having two oppositely extending flange portions and an intermediate curved portion of semi-circular shape, the remaining portion of the circumference of said overflow pipe being encompassed by said intermediate curved portion of the bracket, means to secure each flange of the bracket to said one side of the deodorant reservoir to thereby secure the deodorant reservoir to said overflow pipe, said reservoir having a pump chamber in its lower portion, said pump chamber communicating with said reservoir through an inlet passageway, a first check valve positioned in said inlet passageway, said pump chamber communicating with said overflow pipe through an outlet passageway, a second check valve positioned in said outlet passageway, a piston in said pump chamber and adapted to reciprocate therein, a spring normally urging the piston in one direction, linkage means connected to said piston and said float rod to move the piston in the opposite direction to compress the spring when the float rises in the tank, said first check valve being opened upon movement of the piston in one direction to admit deodorant from said reservoir into said pump chamber, and said second check valve being opened to pass the deodorant from said pump chamber to the overflow pipe when the piston moves in the opposite direction within the chamber.

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