DISINFECTANT DISPENSING DEVICES FOR FLUSH TANKS

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This invention relates to disinfectant dispensing devices particularly as used in flush tanks or water closets.

More particularly, the present invention relates to a flush tank deodorant dispenser having a minimum number of moving parts and provision for interchangeability of the dispensing nozzles.

As is well known, the purpose of the aforesaid dispensing devices is to deodorize or neutralize undesirable odors.

The present invention proposes to use a molded polyethylene dispensing tank which is positionable into the flush tank to dispense deodorizing liquids into the water of the toilet tank. The bottom of the dispensing tank is provided with an aperture adapted to receive nozzles provided with variously sized openings to change the size of the dispensing orifice.

Hereinafter, the deodorant dispensers were provided to deliver a metered quantity of deodorant fluid, thereby necessitating complex and many moving parts resulting in an increase in the probability and possibility of failure of performance. With the present invention, various types of deodorant fluids may be used, and depending upon the viscosity of the fluid, the nozzle openings may be changed to effect a control over the quantity of deodorant dispensed.

A further feature of the present invention is the coaction of the nozzle opening with the closing thereof without any intercommunication or entry of the closure or moving parts thereof into the nozzle opening.

An object of the present invention is to provide a deodorant tank fluid dispenser, operative in response to the release of water from the water tank, with a minimum number of moving parts.

A further object of the present invention is to provide a deodorant tank which isolates the fluid contained therein from any moving parts except at the point of dispensing the same from the nozzle opening.

Yet another object of the present invention is to provide a deodorant tank with interchangeable dispensing nozzles, thereby compensating for differences in viscosity of various deodorant fluids.

Yet another object of the present invention is the provision of an improved deodorant tank fluid dispenser of the above character which is of simple design and construction, economical to manufacture, and highly efficient in the accomplishment of its intended purpose.

The exact nature, features and advantages of the invention will appear from the following description taken in connection with the accompanying drawings, in which:

FIGURE 1 is a schematic elevation view of a bowl and toilet tank therefore illustrating the toilet tank deodorant dispenser.

FIGURE 2 is a front elevation view of the dispenser with the lower portion thereof partially broken away and shown in section.

FIGURE 3 is a side elevational view of the dispenser shown in FIGURE 2 with the top portion broken away, and

FIGURE 4 is an enlarged front sectional view of a portion of the dispenser shown in FIGURE 2 illustrating the nozzle at the bottom of the dispensing tank.

Referring now to FIGURE 1 of the drawing wherein like reference characters denote corresponding parts, the improved deodorant dispenser 10 is shown positioned within the receptacle of a toilet tank or water closet 12 which is covered by the usual cover. As usual, closet 12 is in fluid communication with bowl 14 for the usual purpose.

Turning now to FIGURES 2 and 3 which illustrate the presently preferred mode of practicing the invention, dispenser 10 comprises a tank or receptacle 20 having coupled to the upper end thereof a toilet tank retaining clip 22 and a snap-on cover 24. Coupled by any suitable means to one of the vertical sides 26 of tank 20, preferably a side having the narrower of the two widths, are a pair of float retaining elements or float guides 28 each having an opening guide path therein for movably coupling a float rod 30 having a float ball 32 coupled to a lower end thereof. At the lower end of tank there is provided an opening for frictionally or frictionly retaining a removable nozzle 34 so as to enable the changing and removal thereof.

The base of tank 20 is provided with an inclined surface 36 so as to direct any fluid therein to nozzle 34 for discharge through the orifice in nozzle 34. The shape of nozzle 34 and the size of the orifice will depend upon the viscosity of the fluid in tank 20 so as to enable the proper discharge of the fluid. Accordingly, it is one of the features to provide for the rapid change of nozzles to meet the requirements of the viscosity of the fluid used.

In order to seal the nozzle 34, there is provided a valve seat 38 of rubber or other suitable plastic material which is carried by one end of horizontal arm 40, the other end of arm 40 being coupled to float rod 30 and movable therewith. Valve seat 38 is movable with rod 30 from a normally closed position when tank 12 contains its usual amount of water to an open position when the water is discharged into bowl 14 so as to discharge the disinfectant contained in receptacle 20. Nozzle 34 does not discharge a metered quantity of the fluid, but an amount the variation of which is not critical thereby eliminating the requirement for complex movable parts. Of course, nozzle 34 may be changed to alter the size of the orifice to control the quantity of fluid discharged. It will also be noted that the valve 38 is operatively associated with nozzle 34 but is independent thereof since it does not enter into nozzle 34, but merely contacts the same for sealing and closure thereof, thereby avoiding any wear of or detrimental effect upon nozzle 34.

Cap 42 which is coupled to the end of rod 30 opposite to the end thereof carrying float ball 32 serves to prevent rod 30 upon descent thereof from becoming decoupled from tank 20. Preferably, the rod 30 is rectangular in cross-section to prevent its rotation and to maintain vertical alignment of valve seat 38 with the nozzle 34.

While there has been shown what is at present considered to be a preferred embodiment of the invention, it is apparent that many changes and modifications may be made therein without departing from the invention, and it is therefore, intended in the accompanying claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A disinfectant dispensing device for water tanks comprising a receptacle adapted to contain a disinfectant fluid and provided with an opening in the base thereof, guide means coupled to a side of said receptacle and having aligned apertures, a float mechanism movable with respect to said receptacle and operatively associated with said guide means, said float mechanism having a float rod and a float coupled to said rod at one end thereof, said rod being slidably mounted in said apertures for linear reciprocation, replaceable nozzle means removably en-
gaged with said base within said opening and having an orifice for discharge of said fluid from said receptacle, and valve seat means disposed wholly outside said receptacle and operatively associated with said nozzle means, but independent thereof, for opening and closing said orifice, said valve seat means being directly, rigidly and fixedly coupled solely to said float rod and movable therewith into and out of sealing engagement with said nozzle means at said orifice, to close said orifice in one direction of linear movement of said rod without entry thereinto and to open said orifice in the opposite direction of linear movement of said rod without altering the orifice area thereof.

2. A device according to claim 1, wherein said apertures and said rod are polygonal in trans-axial cross-section, and wherein said float mechanism comprises stop means, other than said valve means, coupled to said rod for limiting the extent of axial movement of said rod in one direction.

3. A device according to claim 2, wherein said valve seat means includes an arm and a valve seat and said stop means comprises a cap at the other end of said float rod, said arm being directly, rigidly and fixedly coupled to said float rod intermediate said float ball and said cap, said valve seat being directly, rigidly and fixedly coupled to and carried by said arm for movement therewith in response to the raising and lowering of the flush water level in said tank.

4. A disinfectant dispensing device for water tanks comprising a receptacle adapted to contain a disinfectant fluid and provided with an opening in the base thereof, guide means coupled to a side of said receptacle, a float mechanism movable with respect to said receptacle and operatively associated with said guide means, said float mechanism comprising a float rod, a float ball coupled to one end of said float rod and a cap coupled to the other end of said float rod, replaceable nozzle means frictionally engaged within said opening for discharge of said fluid from said receptacle, and valve seat means operatively associated with said nozzle means, but independent thereof, for opening and closing said nozzle means, said valve seat means being directly coupled to said float mechanism and movable therewith to close said nozzle means without entry thereinto and to open said nozzle means without altering the orifice area thereof, said valve seat means including an arm and a valve seat, said arm being coupled to said float rod intermediate said float ball and said cap, and said valve seat being coupled to and carried by said arm for movement therewith in response to the raising and lowering of the flush water level in said tank.

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