

Aug. 4, 1953

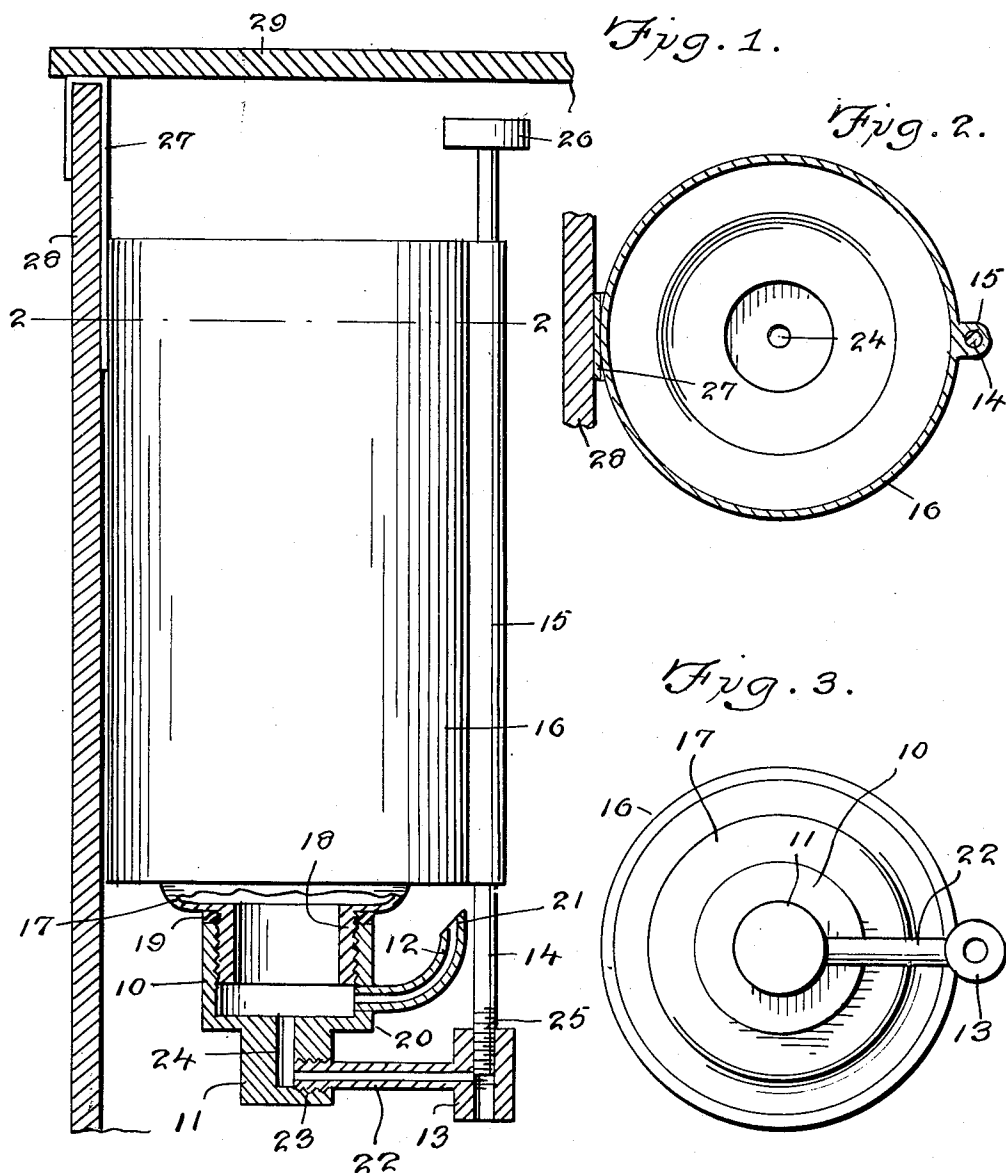
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2,647,266

FLUSH TANK DISINFECTANT DISPENSER

Filed April 5, 1950

2 Sheets-Sheet 1



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Fig. 5.

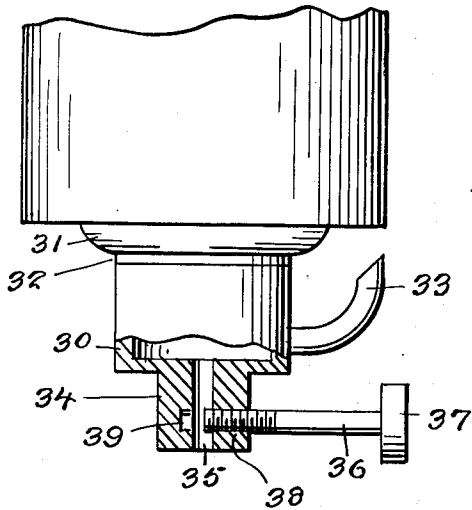


Fig. 4.

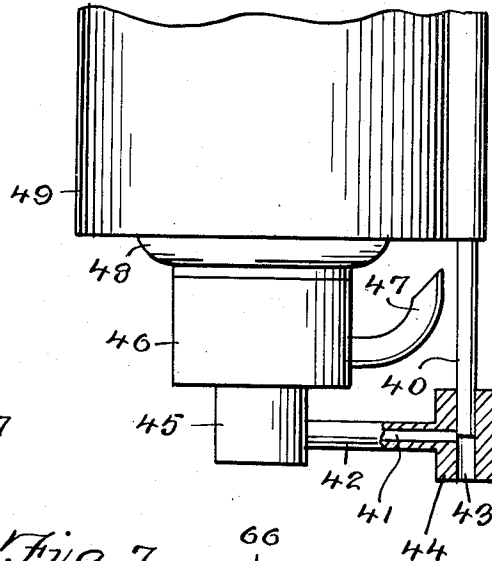


Fig. 6.

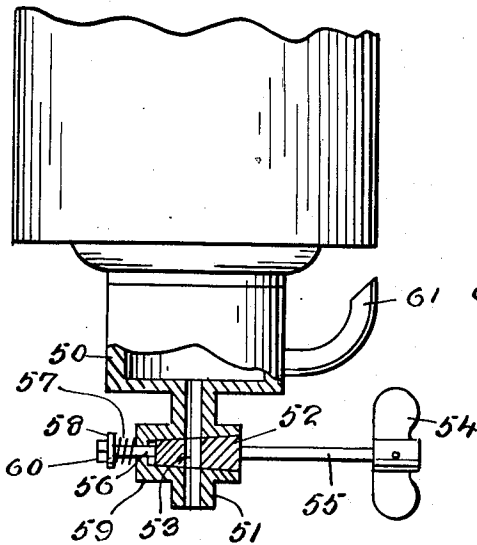
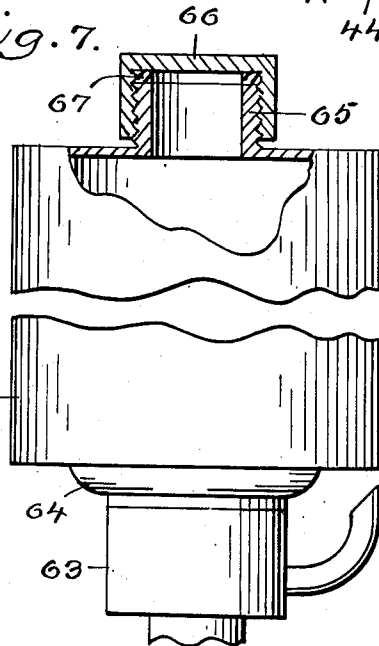


Fig. 7.



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FLUSH TANK DISINFECTANT DISPENSER

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Application April 5, 1950, Serial No. 154,100

3 Claims. (Cl. 4—227)

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This invention relates to disinfectant dispensing devices particularly adapted for flush tanks of toilet bowls and the like where a vent on the device is opened and closed by the changing water level in the tank, and in particular this invention relates to a trap having a valve and a vent therein adapted to be threaded on a depending neck of an inverted container with the container positioned in a flush tank below the normal water level therein.

The purpose of this invention is to provide a disinfectant device in which dispensing means thereof is operated by the rise and fall of water in a tank in which the device is positioned and in which the amount of disinfectant dispensed is controlled from the upper end of the tank without inserting the hand in the water therein.

This application is a continuation in part of my co-pending application filed August 24, 1948 with the Serial Number 45,851, now matured into Patent No. 2,614,265, dated October 21, 1952, the dispensing unit of this invention including substantially a comparatively small cap threaded on the neck of a bottle with a valve provided in the cap and with a vent extended from one side thereof.

Various attempts have been made to provide disinfecting devices for toilet bowl, flush tanks and the like but where these devices operate continuously the quantity of the disinfectant used is excessive and as disinfectants for this purpose are comparatively costly these devices are very seldom used. With this thought in mind this invention contemplates a disinfectant dispensing cap that may be threaded on the neck of a bottle of disinfectant and which, when inserted in a flush tank of a toilet bowl dispenses disinfectant only with the rise and fall of water in the tank.

The object of this invention is, therefore, to provide means for forming a cap that may be threaded on the neck of a bottle of disinfectant whereby disinfectant may be dispensed from the bottle with the bottle in an inverted position by the rise and fall of water in a tank in which the bottle is positioned.

Another object of the invention is to provide a disinfectant device for tanks of toilet bowls and the like that operates with the changes in elevation of water in the tank and that may be applied to tanks without changing the design or construction thereof.

A further object of the invention is to provide a disinfectant dispensing device for toilet bowls that is operated by changes in elevation of water

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in the tank and that may be adjusted from a point above the water level in the tank and which is of a simple and economical construction.

With these and other objects and advantages in view the invention embodies an internally threaded cap having a vent extended outwardly and upwardly from one side thereof with a boss on the closed end of the cap and with a valve extended from the boss and having a stem extended upwardly through guide means in which the bottle or container is positioned.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings wherein:

Figure 1 is a side elevational view illustrating a bottle or container in a supporting bracket in the flush tank of a toilet bowl with the tank and dispensing cap threaded on the lower end of the bottle shown in section.

Figure 2 is a cross sectional downward view through the holder for the bottle taken on line 2—2 of Figure 1.

Figure 3 is a view looking upwardly toward the under surface of the lower end of the dispensing device.

Figure 4 is a side elevational view showing the lower end of the dispensing device illustrating a modification wherein the valve stem is slidably actuated.

Figure 5 is a similar view illustrating a valve of a different type threaded in the plug of the dispensing cap.

Figure 6 is a similar view showing a further modification wherein a different type of valve is used in the dispensing cap.

Figure 7 is a view illustrating a further modification wherein a filling nipple and cap are provided on the upper end of the bottle and container and in which the said filling nipple and cap are shown in sections.

Referring now to the drawings (Figures 1, 2 and 3) wherein like reference characters denote corresponding parts the flush tank disinfectant dispenser of this invention includes a cap 10 having a boss 11 on the lower end with a vent tube 12 extended from one side of the cap, and a valve 13 threaded in the lower end of the boss, and with a valve stem 14 extended upwardly through a tubular guide 15 of a holder 16 for a bottle or container 17.

The cap 10 is internally threaded and, as illustrated in Figure 1, the cap is threaded on a neck 18 of the bottle 17 with a gasket 19 between the end of the cap and surface of the bottle.

The vent tube 12 is integrally mounted in an

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opening 20 in one side of the cap and the upper end extends upwardly to a point 21 which is a sufficient distance above the lower end of the cap to prevent water flowing therefrom.

The valve 13 is provided with a sleeve 22, the end of which is threaded into an opening 23 in the lower part of the boss 11, the center of which is provided with an opening 24 that provides communicating means between the interior of the cap and an opening through the sleeve 22.

The upper end of the valve 13 is threaded to receive the lower threaded end 25 of the valve stem 15 and the upper end of the valve stem is provided with a knob 26 by which the valve stem may be turned to regulate the size of the opening from the sleeve 22 through the valve.

The holder 16 is provided with a bracket 27 that extends over the upper edge of an outer wall 28 of a flush tank, the upper end of which is provided with a cover 29.

In the design illustrated in Figure 5 a cap 30 is positioned on a neck of a bottle or container 31 with a packing washer 32 between the upper end of the cap and wall of the container and the cap, which cap is provided with a vent 33 similar to the vent 12, and boss 34 having an opening 35 extended therethrough, the area of the opening being controlled by a screw 36 having a head 37, which is threaded into an opening 38 in the boss and which is positioned so that the inner end thereof extends into a recess 39 on the opposite side of the opening 35. By this means the area of the opening 35 is controlled by the screw 36 and the screw is set by hand, either before the dispenser is installed in the flush tank or after it is in position therein.

The design illustrated in Figure 4 is substantially the same as that shown in Figure 1 except that the threads on the lower end of the stem 40, similar to the stem 14 are omitted and the opening 41 in the sleeve 42, similar to the sleeve 22 is controlled by sliding the stem 40 upwardly or downwardly in an opening 43 in the valve 44. The sleeve 42 extends from one side of the boss 45 depending from a cap 46 and the cap is provided with a vent 47, the parts being substantially the same as corresponding parts of the dispenser shown in Figure 1. The cap 46 is threaded on a neck of a bottle or container 48 and the container is positioned in a holder 49.

In the design shown in Figure 6 a cap 50, similar to the cap 10 is provided with a nipple 51 having a valve 52 rotatably mounted therein and the valve is provided with a passage 53, the position of which is controlled by a handle 54 on the outer end of a stem 55. The valve 52 is also provided with a stem 56 having a spring 57 positioned between a washer 58 on the outer end thereof and the end of the valve cylinder 59. A nut 60 is provided on the outer end of the stem 56 and the cap 50 is provided with a vent 61.

In the design illustrated in Figure 7 a container 62 is provided with a cap 63 which may be similar to the cap 10 or formed like the caps 30, 46 or 50 and this cap may be threaded or otherwise secured to a neck 64 on the lower end of the bottle or container. The container 62 is also provided with a filling nipple 65 having a closure cap 66 thereon and a sealing washer or gasket 67 may be provided in the cap.

It will be understood that the filling nipple may be used with the bottle or container of the other design and caps of any suitable type or design may be used on the lower end thereof.

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With the parts arranged in this manner a device may be suspended in a tank such as a flush tank of a toilet bowl and with the water level positioned above the upper end of the vent tube 12 the device will be sealed with the disinfectant retained therein. Each time the water drops below the upper end of the vent tube, with flushing of the tank or bowl, air is drawn in through the vent permitting disinfectant to drop through the valve 13, or through the valve illustrated in the other design.

As disinfectant is used from the container the cap is removed and placed on another container or the same container may be filled and reused.

It will be understood that other modifications may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. In a flush tank disinfectant dispenser, the combination which comprises a cap having an open end and a closed end, the inner surface of said cap being threaded to receive a threaded neck of a bottle, an arcuate vent tube extended from a point in the side of the cap adjacent the closed end of the cap to a point corresponding with the edge of the open end thereof, a boss having a threaded opening in one side extended from the closed end of the cap, a valve having a sleeve extending at right angles thereto, and said sleeve is provided with a threaded end that is threaded into the threaded opening in the boss, and said sleeve positioning said valve to a point outwardly of but parallel to the closed end of the cap and a valve stem extended from the valve to a point above the upper end of the bottle in parallel relation thereto and adapted to extend through guide means on the bottle.

2. In a flush tank disinfectant dispenser, the combination which comprises a container having a threaded neck extended from the lower end thereof, a cap having a threaded inner surface receiving the threaded neck of the container, a vent tube extended upwardly from one side of the cap from a point thereon below the threaded neck of the container, said cap having a boss extended downwardly therefrom with a threaded opening in one side, a valve having a threaded sleeve extending at right angles thereto and said sleeve is provided with a threaded end that is positioned in the threaded opening in the side of the boss, said container having a tube on one side thereof, and said sleeve positions said valve so that a valve stem extended from the valve will extend through the tube on the side of the container to a point positioned beyond the upper end of the container whereby the valve is adjusted from a point positioned above the upper end of the container.

3. In a flush tank disinfectant dispenser, the combination which comprises a container having a threaded neck extended from the lower end thereof, a cap having a threaded inner surface receiving the threaded neck of the container, a vent tube extended upwardly from one side of the cap from a point thereon below the threaded neck of the container, said cap having a boss extended downwardly therefrom with a threaded opening in one side, a valve having a threaded sleeve extending at right angles thereto and said sleeve is provided with a threaded end that is positioned in the threaded opening in the side of the boss, said container having a tube on one side thereof, said sleeve positions said valve so

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that a valve stem extended from the valve will extend through the tube on the side of the container to a point positioned beyond the upper end of the container whereby the valve is adjusted from a point positioned above the upper end of the container, said container having a threaded nipple on the upper end, and a closure cap positioned on the threaded nipple on the upper end of the container.

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