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TOILET DISINFECTING DEVICE

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Fig. 1

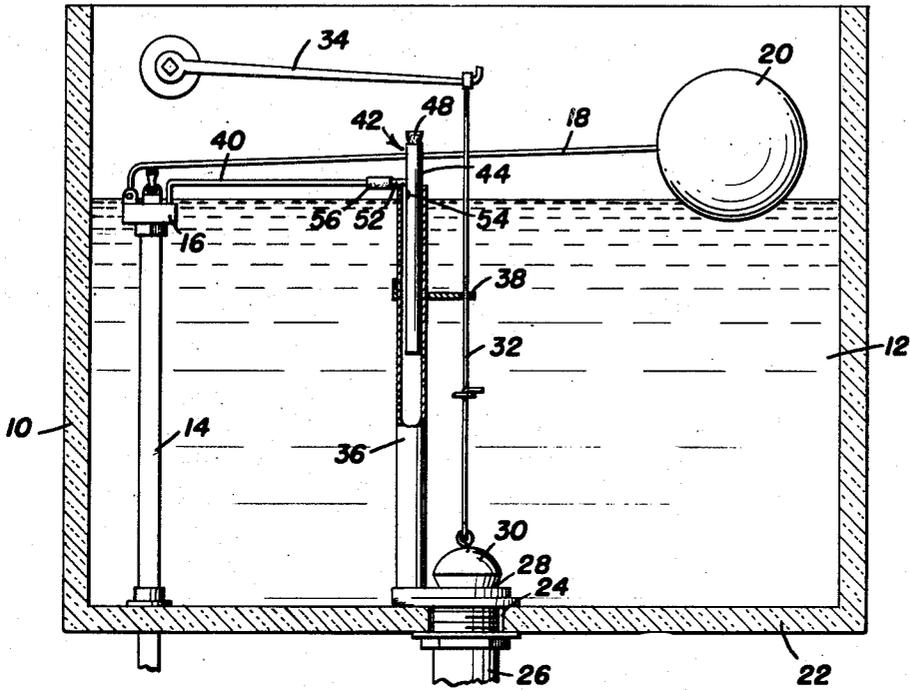


Fig. 2

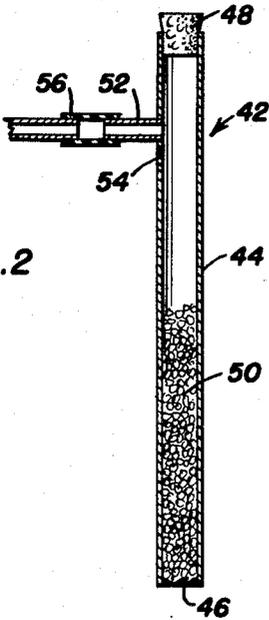
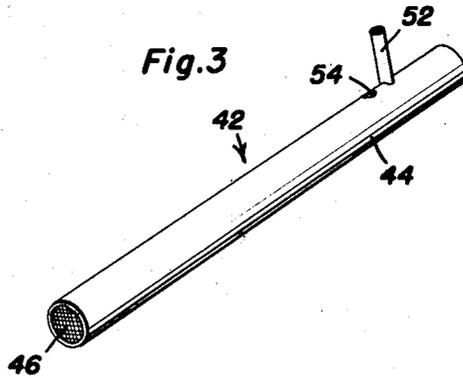


Fig. 3



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1

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**TOILET DISINFECTING DEVICE**

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1 Claim. (Cl. 4—228)

This invention relates in general to a toilet disinfecting device, and more specifically to a toilet disinfecting device for supplying disinfectant to water standing in a closet bowl.

The primary object of this invention is to provide a disinfecting device for installation in combination with a water closet whereby disinfectant and other chemicals may be periodically supplied to the closet bowl.

Another object of this invention is to provide an improved disinfecting device for installation in the overflow tube of a water closet tank whereby disinfectant will be supplied after each flushing and refilling operation of the water closet tank.

Another object of this invention is to provide an improved disinfecting device for mounting in a water closet tank, the disinfecting device being intended to be connected to an auxiliary water supply pipe whereby water is circulated through chemicals carried by said disinfecting device upon flushing and refilling of the water closet tank.

Another object of this invention is to provide an improved disinfecting device for installation in water closet tanks, said disinfecting device being of a simple and compact construction whereby it may be economically manufactured.

Another object of this invention is to provide an improved disinfecting device for installation in a water closet tank, said disinfecting device being easily and quickly mounted in said water closet tank with only a minor change thereto.

Another object of this invention is to provide an improved disinfecting device for mounting in a water closet tank whereby said disinfecting device may be easily refilled with disinfecting chemicals.

A further object of this invention is to provide an improved disinfecting device for supplying chemicals directly to water filling the closet bowl at the end of the filling operation.

A still further object of this invention is to provide an improved attachment for a water closet bowl whereby chemicals may be applied to water standing in the water closet bowl in order to soften the same and thereby prevent the forming of a scale on the water closet bowl.

With these objects definitely in view, this invention resides in certain novel features of construction, combination and arrangement of elements and portions as will be hereinafter described in detail in the specification, particularly pointed out in the appended claim, and illustrated in the accompanying drawings which form a material part of this application, and in which:

Figure 1 is a transverse vertical sectional view through a conventional water closet tank, the overflow tube of the water closet tank being provided with the improved disinfecting device which is the subject of this invention, the overflow tube being partially broken away and shown in section in order to illustrate the installation of the disinfecting device;

Figure 2 is an enlarged transverse vertical sectional view through the disinfecting device of Figure 1 and shows the construction thereof including its connection to an auxiliary water supply pipe; and

Figure 3 is an enlarged perspective view of the improved disinfecting device of Figure 1 and showing the various portions thereof.

Similar characters of reference designate similar or identical elements and portions throughout the specification and throughout the different views of the drawings.

Referring now to the drawings in detail, it will be seen

2

that there is illustrated in Figure 1 a conventional water closet tank 10 which is partially filled with water 12 for flushing a conventional water closet bowl (not shown).

The water closet tank 10 is provided with a water inlet pipe 14 which has secured to its upper end a valve structure 16. Extending from the valve structure 16 is a float support rod 18 on which is mounted a spherical float 20. The float 20 is illustrated as floating on the water 12 and the valve structure 16 is in its closed position.

The bottom 22 of the water closet tank 10 is provided with a centrally located opening 24 to which is secured in water-tight relation a pipe 26 communicating with the water closet bowl. The supply pipe 26 is provided at its upper end with a tapered seat 28 in which is seated a ball valve 30. Connected to the upper end of the ball valve 30 is an actuating rod 32 whose upper end is secured to an operating lever 34. The supply pipe 26 also has secured to its upper end an overflow tube 36 which, in turn, has mounted thereon a guide 38 for the operating rod 32 of the ball valve 30.

In order that the trap of the water closet bowl be completely filled after the flushing operation there is provided an auxiliary water supply 40 which normally extends from the valve structure 16 down into the water overflow pipe 36. During the refilling operation of the water closet tank 10, the auxiliary water supply 40 passes water through the overflow pipe 36 with the water by-passing the ball valve 30 and entering the water closet bowl.

It will be noted that all the above recited structure is conventional and is no part of this invention with the exception that it is utilized in combination with the disinfecting device, which is the subject of this invention.

Referring now to Figures 2 and 3, it will be seen that there is illustrated a disinfecting device, which is the subject of this invention, the disinfecting device being generally referred to by the reference numeral 42. The disinfecting device 42 comprises an elongated tubular container 44 having a perforated bottom 46 in the form of a screen secured across the end thereof. The upper end of the container 44 is opened and is normally closed by a cork stopper 48. The container 44 is provided with granular chemicals 50 of a size which will not pass through the perforated bottom 46.

The disinfecting device 42 includes a lateral tube 52 secured to the container 44 adjacent its upper end and communicating therewith. The tube 52 is intended to function as a water inlet nipple whereby water may pass into the container and through the chemicals 50. In order that a syphoning effect is not induced, the container 44 is provided with an opening 54 adjacent its upper end and underlying the tube 52.

Referring now to Figure 1 in particular, it will be seen that the disinfecting device 42 is of such a size that the tubular container 44 easily fits within the overflow tube 36 and is supported therein by its inlet tube 52 engaging the upper edge of the overflow tube 36. Since the disinfecting device 42 is placed within the overflow tube 36, the auxiliary water supply pipe 40 is cut off. Since it is intended that the auxiliary water supply pipe 40 supply water to the inlet tube 52 of the container 44, the end is cut off so that it is closely adjacent the free end of the inlet tube 52. The auxiliary water supply pipe 40 and the inlet tube 52 are secured together by a rubber sleeve 56 telescoped over their free ends.

In the operation of the disinfecting device, it will be seen that when the actuating lever 34 is pivoted, the ball valve 30 is raised from its tapered seat 28 and the water 12 rushes into the supply pipe 26 and flushes the water closet. Due to the weight of the ball valve 30, after the water 12 has been emptied from the water closet tank 10, the valve reseats itself. When the water level in the water closet tank 10 falls, the float supporting rod 18 is pivoted clockwise, as viewed in Figure 1, thereby actuating the valve structure 16 to supply water into the water closet tank 10. At the same time water is also supplied to the auxiliary water supply pipe 40, the water passing into the inlet tube 52, down through the container 44 and the chemicals 50, and out of the perforated bottom 46 into the overflow tube 36. This water then passes through the supply pipe 26 into the bowl of the water closet and its associated trap. It is this water that is normally found

3

at the bottom of the water closet bowl after the flushing sequence.

The elements of the disinfecting device 42 are preferably formed of copper or brass although there are numerous other materials from which the device may be satisfactorily formed. The chemicals 50 stored within the container 44 are a mixture of three separate chemicals which disinfect, deodorize, and soften the water that stands in the closet bowl after the flushing sequence. The chemicals not only disinfect and deodorize, but due to the softening of the water, prevent the formation of a deposit in the bowl and its associated trap.

While the water closet tank illustrated and described herein is of the type which is separate from the water closet bowl and has a separate overflow tube, it is not intended to so limit the invention as the disinfecting device may be utilized equally well in any design of a water closet tank having an overflow tube and an auxiliary water supply pipe.

The operation of this device will be understood from the foregoing description of the details thereof, taken in connection with the above recited objects and drawings. Further description would appear to be unnecessary.

Minor modifications of the device, varying in minor details from the embodiment of the device illustrated and described here, may be resorted to without departure from the spirit and scope of this invention as defined in the appended claim.

Having described the invention, what is claimed as new is:

4

In combination with a water closet tank having a vertical water inlet pipe, and a vertical overflow pipe, a water supply pipe extending laterally from said inlet pipe and terminating close to said overflow pipe, a tube adapted to contain a chemical disinfectant and inserted in the upper end of said overflow pipe, said tube having a perforated lower end, and an open upper end, a removable stopper in the upper end of said tube, a lateral water inlet nipple on said tube below and adjacent its upper end extending over and resting on the upper end of the overflow pipe and removably suspending said tube in said overflow pipe, and a resilient sleeve connecting said nipple and the terminal of said supply pipe.

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