

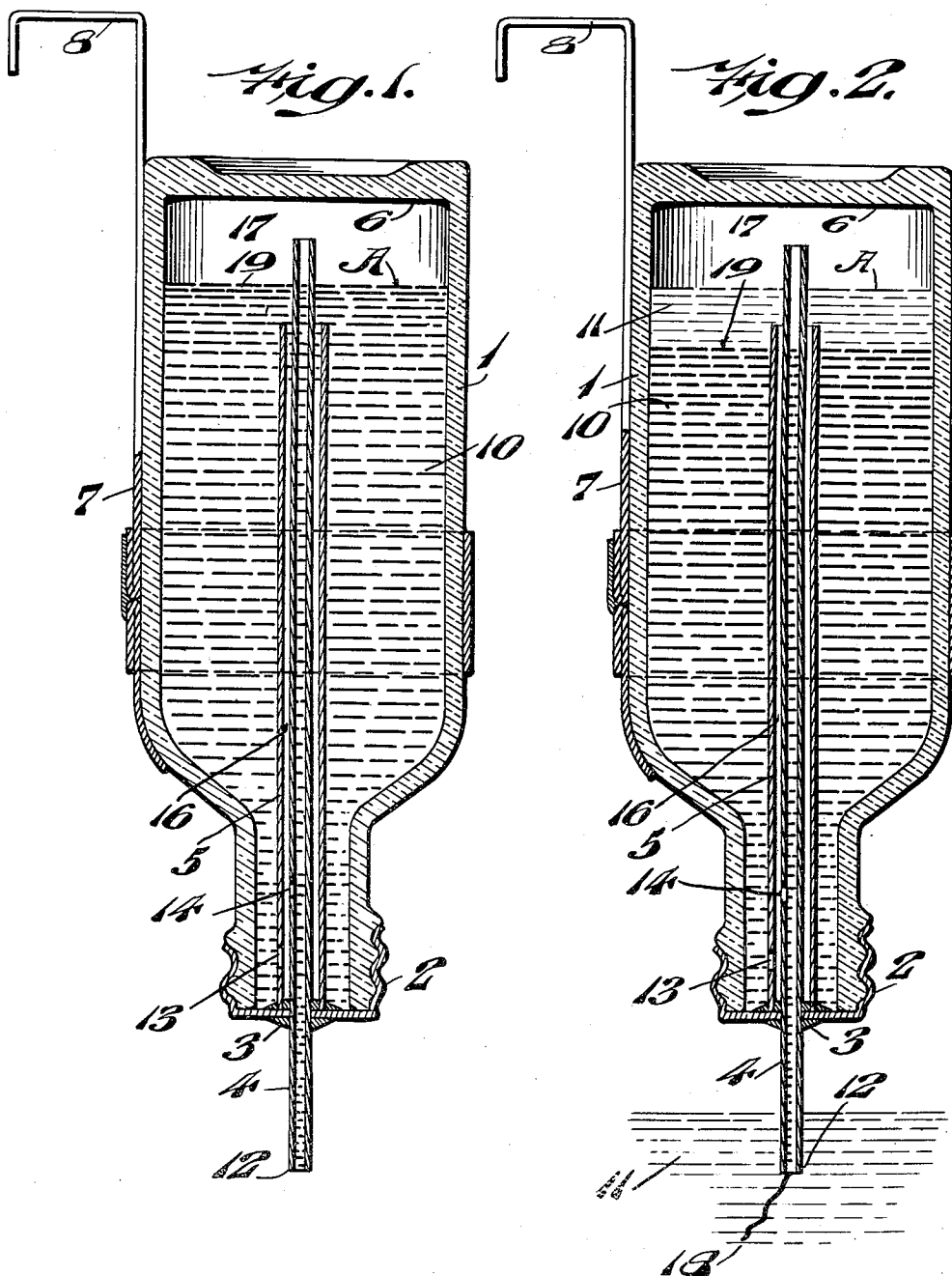
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DISPENSING DEVICE

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DISPENSING DEVICE

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2 Claims. (Cl. 221-67)

My invention relates to a new and useful dispensing device, and it relates more particularly to a device adapted to dispense any desired deodorant, disinfectant, or other liquid, from a container intermittently into the contents of another container in a controlled and regulated manner, as, for instance, for the purpose of dispensing a disinfectant and deodorant into the water of a flush tank of a toilet bowl intermittently between successive flushings of said toilet bowl, it being understood that my novel dispensing device is equally applicable for use in connection with other devices also.

My invention still further relates to a dispensing device of this kind, the structure of which includes no movable or working parts so that there is nothing to wear out or get out of order, thereby eliminating all expense and trouble involved in replacements or repairs.

My invention still further relates to a dispensing device of this character which is of an extremely simple and inexpensive construction and assembly, thereby placing the device within the purchasing power of the entire public.

My invention still further relates to a dispensing device of this character which needs no servicing whatever, except an occasional replenishing of the supply of disinfectant, and, due to the manner in which my novel dispensing device is calculated to operate, the supply of disinfectant need only be replenished at relatively long intervals.

My invention still further relates to a novel dispensing device of this character which can be installed and serviced by the purchaser without the exercise of any particular skill.

In the accompanying drawing:

Fig. 1 represents a vertical sectional view of a dispensing device embodying my invention shown in the inoperative position.

Fig. 2 represents a similar view showing my novel dispensing device after it has been put into operation.

Referring to the drawing, in which like reference characters indicate like parts, 1 designates any desired container, such as a bottle or the like, which is provided with a water-tight removable cap 2 adapted to engage the mouth thereof. Passing through the cap 2 and soldered or otherwise packed as at 3 are the inner dispensing tube 4 and the outer shielding tube 5. The connection 3 of the tubes 4 and 5 with the cap 2 is, of course, water-tight. The upper end of the inner tube 4 reaches to a point near the top (inverted bottom) 6 of the container 1 while the

upper end of the shielding tube 5 stops a little short of the upper end of the inner dispensing tube 4, as shown. The bottle or container is held in the inverted position by any desirable support 7, the upper hooked end 8 of which is adapted to engage a wall of the flush tank or other container to which the dispensing device is to be applied. In operation the cap 2 is removed and the bottle or container 1 is filled with the desired disinfectant 10, which may be of any desired solution having a specific gravity or density greater than that of the water 11 into which the disinfectant or deodorant 10 is to be intermittently introduced. When the bottle has been filled, the cap 2 is applied to the mouth thereof, with the inner dispensing tube 4 and the shielding tube 5, which are rigidly carried by the cap 2, extending downwardly into the container 1, the inner tube 4 projecting beyond the cap 2, as shown. The container is then inverted and positioned in the support 7 and is so spaced from the level of the water 11 in the flush tank or other container (not shown) as to bring the lower end 12 of the tube 4 to a point below the normal level of the water 11. The outer water shielding tube 5 is provided with the opening 13 in close proximity to the cap 2 and the inner tube 4 is provided with another opening 14 a little further from the cap 2 than is the opening 13. The respective sizes of the openings 13 and 14 depend upon the nature of the disinfectant used as well as the rate of speed with which it is desired to effect the dispensing of the disinfectant or deodorant.

The operation is as follows: When the container 1 is inverted, the disinfectant 10 passes through the lower opening 13 in the outer tube 5 and upwardly in the space 16 between the inner and outer tubes 4 and 5 and enters the tube 4 through the opening 14. The partial vacuum created in the upper end of the container at 17 prevents the escape of the disinfectant, except for a drop or two, and as long as the lower end 12 of the inner tube 4 is not immersed in water or other liquid of a smaller specific gravity than the specific gravity of the disinfectant 10 the device will not operate. This condition prevails for a short time during and immediately after the water in the flush tank has been used and the flush tank is empty. As the flush tank refills, the normal level of the water 11 therein rises above the lower end 12 of the tube 4, as shown in Fig. 2, and the disinfectant 10 passes out in the form of a ribbon 18 into the water 11 to sterilize and deodorize the same.

The exit of the disinfectant 10 tends to increase the vacuum in the area 17, so that a suction is exerted upwardly against the water 11 through the inner tube 4. Due to the difference in weights or specific gravities of the disinfectant 10 and water 11, the water rises in the tube 4 until it reaches the opening 14, whereupon it enters the opening 14 and travels upwardly in the space 16 between the inner and outer tubes 4 and 5 and collects over the upper level 19 of the disinfectant, as shown in Fig. 2. When the weight or specific gravity of the water 11 has been sufficiently raised by the admixture therewith of the disinfectant 10, a point of balance is reached at which the flow of the disinfectant 10 from the container is arrested. This condition obtains until the water in the flush tank has been used and a supply of fresh water fills the tank, whereupon the operation of dispensing is resumed. The water being lighter than the disinfectant collects at the top, as shown in Fig. 2, but in order to minimize the diluting action of the water on the disinfectant the outer water shielding tube 5 is used to conduct the water up to the top of the container to a point above or very close to the upper level 19 of the disinfectant 10. I have built and am ready to demonstrate an actual working device which, when applied to a flush tank or other device, dispenses the disinfectant, intermittently after each flushing of the tank, and in which the amount of disinfectant used is replaced with a corresponding amount of water, so that the initial level A of the liquid within the container first obtained when the container is inverted remains constant, the only change being that instead of the container being filled with disinfectant 10 it is, after a period of operation, filled with water. My theory as to the operation of this device is that the difference in weight or specific gravity between the water and the disinfectant causes the water to rise and causes the disinfectant to flow into the flush tank, and it is also possible that a chemical affinity between the water and the disinfectant

may also aid in the operation. In actual experience I have found that a container holding a few ounces of disinfectant, when subjected to normal use in connection with the flush tank of a toilet bowl, lasts about three months, at the end of which it is merely necessary to empty the container of the water that has seeped into it and to refill such container with the disinfectant, whereupon the container is again placed in the inverted position shown in Fig. 2 for operation until the disinfectant therein is again replaced by the water. In the drawing I have left the chamber or space 16 between the inner and outer tubes 4 and 5 unshaded, in order to prevent confusion, and I have also not illustrated in the drawing the stream of water 11 going up through the lower end of the tube 4 and then up through the chamber 16 to where the water is shown at 11 in Fig. 2, also in order not to confuse the drawing.

I claim:

1. A dispensing device comprising an inverted receptacle, a liquid-tight closure for the mouth thereof, an inner tube carried by said closure and extending upwardly within said inverted receptacle and downwardly below the closure thereof, and an outer tube carried by said closure and extending upwardly within said container concentrically with said inner tube, there being openings in said inner and outer tubes in proximity to but at different distances from said closure.

2. A dispensing device comprising an inverted receptacle, a liquid-tight closure for the mouth thereof, an inner tube carried by said closure and extending upwardly within said inverted receptacle and downwardly below the closure thereof, and an outer tube carried by said closure and extending upwardly within said container concentrically with and spaced from said inner tube, there being openings in said inner and outer tubes in proximity to but at different distances from said closure, said outer tube being shorter than said inner tube.

ELWOOD C. LEWIS.