

Feb. 26, 1952

T. J. RYDER, JR

2,587,388

DISPENSING CAP

Filed Sept. 4, 1947

FIG. 1.

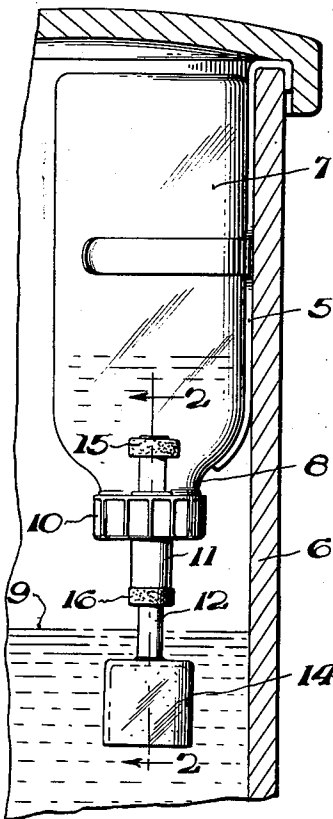


FIG. 2.

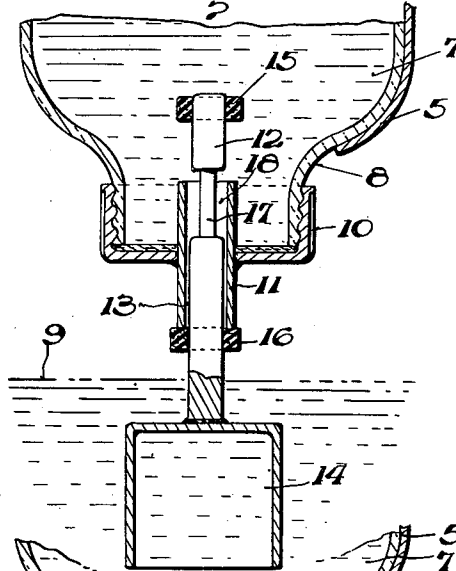


FIG. 3.

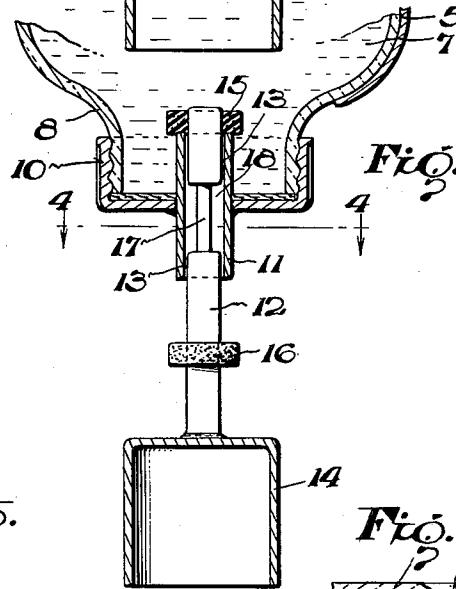


FIG. 5.

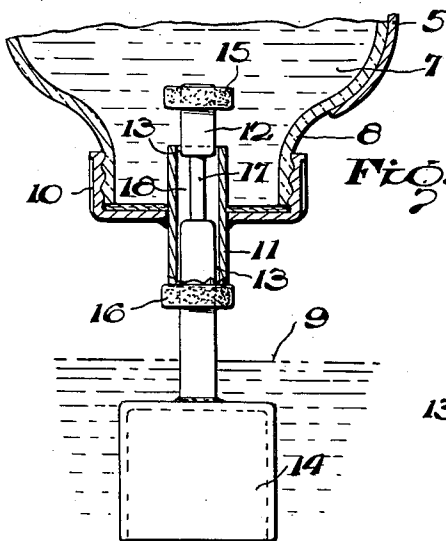


FIG. 6.

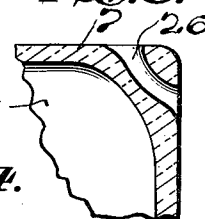
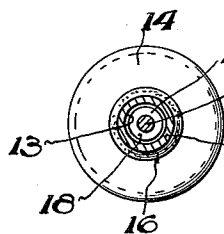


FIG. 4.



INVENTOR.

Thomas J. Ryder, Jr.

BY

Robert F. Beck

Attorney

UNITED STATES PATENT OFFICE

2,587,388

DISPENSING CAP

Thomas J. Ryder, Jr., Lincoln Park, N. J.

Application September 4, 1947, Serial No. 772,093

2 Claims. (Cl. 4—227)

1

My invention relates to dispensing, and more particularly to means for intermittently dispensing fluid, for instance, disinfectant, deodorizers and/or solvents into flush tanks or the like.

One of the objects of my invention is to provide a dispensing device which is so constructed and arranged whereby the same may be placed and supported within the flush tank of a toilet for supplying the tank with a disinfectant or the like at predetermined intervals.

Another object of my invention is to provide a dispensing device of the foregoing described character which is equipped with a fluid actuated valve mechanism adapted to be operated by the filling and discharging action of the water of the tank.

A further object of my invention is to provide a dispensing device of the foregoing described character which is so constructed and arranged whereby a bottle of disinfectant fluid may be inserted within the tank with the contents being dispensed by the fluid actuated valve mechanism.

An important object of my invention is to provide a device of the foregoing described character which is simple in construction, durable in use, efficient in operation and economical in manufacture.

With the above and other objects in view, as will hereinafter appear, the invention consists in the combination and arrangement of parts hereinafter set forth and illustrated in the accompanying drawings from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

Referring to the drawings wherein like reference characters designate like parts throughout the several views:

Figure 1 is a side elevation of my invention as applied to a flush tank.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1 illustrating the valve mechanism in closed position.

Figure 3 is a view similar to Figure 2 but illustrating the valve mechanism in open position.

Figure 4 is a sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a view similar to Figure 2 but illustrating one of the gaskets as being adjusted to another position.

Figure 6 is a fragmentary detailed sectional view of a modified form of container.

In practicing my invention, as illustrated in the drawings, I employ a bracket 5 which, in the present instance, is detachably connected

2

within the flush tank 6 of a toilet. The bracket 5 removably supports a container, for instance, a bottle 7 within the tank and which bottle contains a fluid disinfectant. The bottle 7 is of a type having an exteriorly threaded neck 8 disposed downwardly within the flush tank and in predetermined relation with the level 9 of fluid or water within the tank when the latter is filled.

The contents or disinfectant of the bottle 7 is discharged in predetermined quantities into the tank by means of a fluid or water actuated valve mechanism, the latter being responsive to the rise and fall of the water in the tank during flushing and filling of the latter. The valve mechanism comprises a cap 10 threadily connected about the neck 8 of the bottle 7 and is provided with a centrally disposed sleeve 11 extending axially through its end radial wall and in which is slidably mounted a cylindrical valve stem 12 having a diameter of a size to form a discharge passage 13 about the inside face of the sleeve 11. The lower or outer end of the valve stem 12 has secured thereto the radial end wall of an inverted cylindrical cup or float member 14, while the upper or inner end of the stem 12 has applied thereabout a rubber gasket or stop member 15 for limiting the downward movement of the stem 12 and effecting a seal with the upper or inner end of the sleeve 11. The outer or lower end of the stem 12 has secured thereon, between the lower or outer end of the sleeve 11 and the cup 14, a gasket or sealing member 16 for limiting the upward movement of the stem and sealing of the lower end of the sleeve about the stem. Subjacent its upper end, the stem 12 is formed with a diametrically reduced section 17 which cooperates with the sleeve to form a disinfectant receiving chamber 18.

In operation—assuming disinfectant is contained within the bottle 7, the valve stem 12 in raised position by reason of the level 9 of the water within the tank 6, and the chamber 18 filled with disinfectant as illustrated in Figure 2—it will be apparent that when the tank is flushed and the water level 9 therein thus lowered, that the valve stem 12 will move downwardly a distance to effect engagement and sealing relation of the gasket 15 with the top of the sleeve 11 and at the same time open the lower end of the passage 13 to permit discharge of the disinfectant, contained in the chamber 18, into the tank as illustrated in Figure 3. As the water rises in the tank, the valve stem 12 will

3

be actuated upwardly within the sleeve 11 and effect sealing engagement of the gasket 16 with the lower end of the sleeve to preclude leakage of disinfectant from the chamber 18 and permit filling of the latter by disinfectant within the bottle. Obviously, by axially adjusting the gasket 16 relative to the stem 12, the amount of disinfectant discharged may be varied, it being understood that the rate of discharge of water from the tank and the water level remain the same.

When it is desirable to thoroughly clean the valve mechanism, the gasket 15 may be removed from the valve stem 12 and the stem disassembled with respect to the cap and sleeve. Furthermore, the gasket 15 may be adjusted relative to the stem 12 in lieu of the adjustment of the gasket 16.

If desired, a modified form of container or bottle 25 may be employed which, as illustrated in Figure 6, has its inverted bottom end formed with a relatively thick wall through which is formed an opening 26 for receiving a hook or the like carried by the tank whereby the bottle 25 may be suspended therein without the use of the bracket 5 or the like.

Without further elaboration, the foregoing will so fully explain the invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service. Moreover, it is not indispensable that all the features of the invention be used conjointly since they may be employed advantageously in various combinations and subcombinations.

It is obvious that the invention is not confined to the herein described use therefore as it may be utilized for any purpose to which it is adaptable. It is therefore to be understood that the invention is not limited to the specific construction as illustrated and described, as the same is only illustrative of the principles involved which are capable of extended application in various forms, and the invention comprehends all construction within the scope of the appended claims.

What I claim is:

1. In a device of the character described, a closure cap adapted to be detachably secured to the opening of an inverted fluid container secured within a flush tank, a sleeve fixed to and extending through said cap and having upper and lower ends with respect to said container, a valve stem slidably mounted within said sleeve and having upper and lower end portions relative to said ends, said sleeve having a bore of a greater diameter than the diameter of said stem to thus provide a fluid passage about said stem, said stem being formed between said portions with a diametrically reduced section defined by a pair of radial and confronting upper and lower end faces, said faces coacting with said sleeve to provide a chamber between said portions for receiving fluid from within said container for discharge into said tank through said fluid passage, a float depending from said lower end portion for moving said stem upwardly and downwardly within said sleeve upon the rise and fall of fluid within said tank, respectively, upper and lower gaskets frictionally secured on said upper and lower end portions for limiting the downward and upward movements, respectively, of said stem and for sealing said ends of said sleeve when engaged therewith, said upper end portion being limited to a predetermined length

4

only sufficient to confine said upper gasket to a position thereon for rendering said upper gasket effective at all times for maintaining said lower face within said sleeve when said upper gasket engages said upper end upon downward movement of said stem whereby, discharge of fluid from said chamber into said tank by way of said passage and said lower face is precluded from engagement with the lower end of said sleeve during upward movement of said stem.

2. In a device of the character described, a closure cap adapted to be detachably secured to the opening of an inverted fluid container secured within a flush tank, a sleeve fixed to and extending through said cap and having upper and lower ends with respect to said container, a valve stem slidably mounted within said sleeve and having upper and lower end portions relative to said ends, said sleeve having a bore of a greater diameter than the diameter of said stem to thus provide a fluid passage about said stem, said stem being formed between said portions with a diametrically reduced section defined by a pair of radial and confronting upper and lower end faces, said faces coacting with said sleeve to provide a chamber between said portions for receiving fluid from within said container for discharge into said tank through said fluid passage, a float depending from said lower end portion for moving said stem upwardly and downwardly within said sleeve upon the rise and fall of fluid within said tank, respectively, upper and lower gaskets frictionally secured on said upper and lower end portions for limiting the downward and upward movements, respectively, of said stem and for sealing said ends of said sleeve when engaged therewith, said upper end portion being limited to a predetermined length only sufficient to confine said upper gasket to a position thereon for rendering said upper gasket effective at all times for confining said lower face within said sleeve when said upper gasket engages said upper end upon downward movement of said stem whereby, discharge of fluid from said chamber into said tank by way of said passage and said lower face is precluded from engagement with the lower end of said sleeve during upward movement of said stem, one of said gaskets being axially adjustable on said stem to vary the operating stroke of said stem for controlling the discharge of fluid from said container into said chamber through said passage, one of said gaskets being removable from said stem to permit disassembly of said stem relative to said sleeve for cleaning of said chamber.

THOMAS J. RYDER, Jr.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
580,768	Carter	Apr. 13, 1897
849,211	Daly	Apr. 2, 1907
966,900	Garnet	Aug. 9, 1910
1,602,554	Schrank	Oct. 12, 1926
1,883,139	Walter	Oct. 18, 1932
2,065,181	French	Dec. 22, 1936

FOREIGN PATENTS

Number	Country	Date
24,883	Great Britain	Nov. 16, 1904