

F. R. BENSINGER.  
DISINFECTING APPARATUS.  
APPLICATION FILED OCT. 3, 1911.

1,021,500.

Patented Mar. 26, 1912.

Fig. 1.

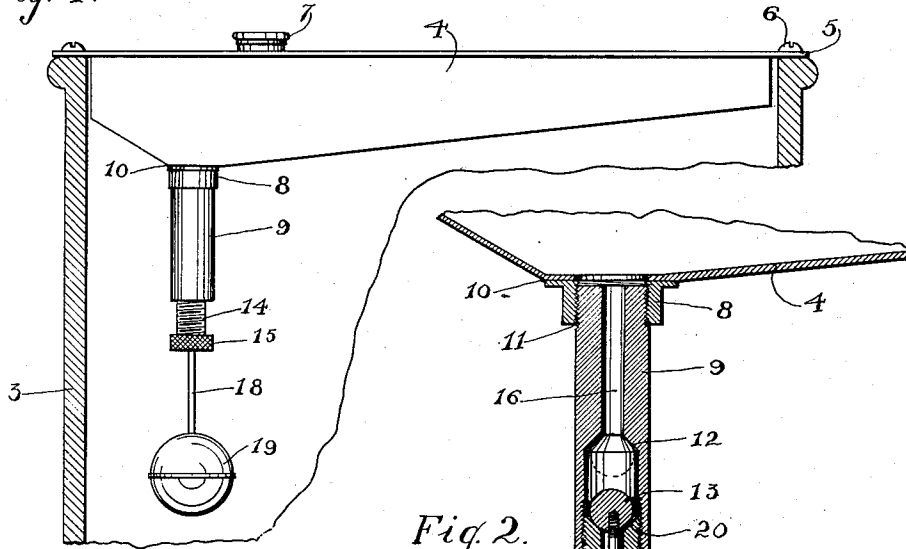
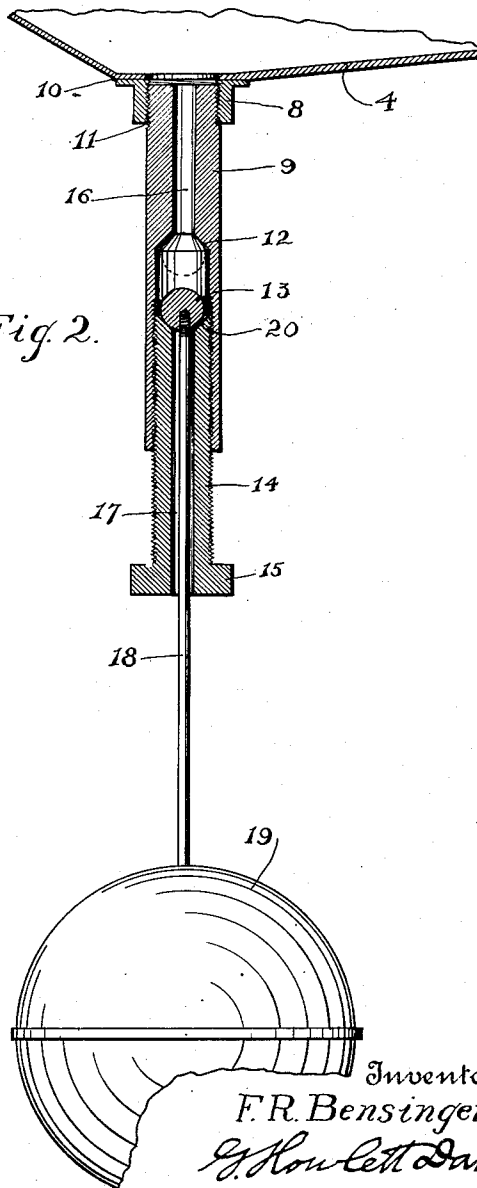


Fig. 2.



Witnesses  
*Chas. Rippey*  
*Newton P. Willis,*

Inventor  
*F. R. Bensinger.*  
*G. Howell Davis*  
Attorney

# UNITED STATES PATENT OFFICE

FORBES R. BENSINGER, OF FRANKLIN, PENNSYLVANIA, ASSIGNOR TO THE KRETOL COMPANY, INC., OF WASHINGTON, DISTRICT OF COLUMBIA, A CORPORATION OF DELAWARE.

## DISINFECTING APPARATUS.

1,021,500.

Specification of Letters Patent. Patented Mar. 26, 1912.

Application filed October 3, 1911. Serial No. 652,477.

*To all whom it may concern:*

Be it known that I, FORBES R. BENSINGER, a citizen of the United States of America, residing at Franklin, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Disinfecting Apparatus, of which the following is a specification.

My invention relates to disinfecting apparatus and more particularly to apparatus of this character especially designed for use in connection with the flush tanks of water closets.

Various types of apparatus have heretofore been proposed for the purpose of supplying disinfectants to the bowls or hoppers of closets, urinals, etc., and some of these have been used with more or less success.

Objections, however, have arisen in actual practice in connection with most apparatus of this character, and it is therefore the object of the present invention to provide means for effectively and economically discharging a disinfecting liquid into the closet or the like each time that flushing takes place. To this end I provide a disinfectant container located in the flush tank itself, and equipped with an automatic valve device so designed as to discharge a given quantity of the liquid into the tank each time that the water level rises or falls therein.

In order that my invention may be clearly understood, reference is had to the accompanying drawing forming a part of this specification and in which,

Figure 1 is a side elevation of my complete apparatus, the same being shown as applied to the flush tank of a closet, the tank being shown in section and partly broken away. Fig. 2 is a vertical section on an enlarged scale through my improved valve and associated parts.

Referring to the drawings in detail, the flush tank is indicated at 3 and may be of any well known type. This tank may be equipped with any of the usual feed devices for supplying water thereto, such devices operating, as is well known, to automatically fill the tank after it has been emptied through the flushing pipe.

The disinfectant container is designated by the reference character 4, and as shown in the drawing is preferably of a flat shall-

low construction, of a length sufficient to extend entirely across the top of the tank, as illustrated in Fig. 1. The container is provided with flanges 5 which rest upon the upper edge of the tank, through which screws 6 may pass to secure the container in position. An opening, furnished with a screw cap 7, may be provided for filling the container.

The bottom of the container slopes downwardly from both sides to the distributing valve, which valve, in order not to interfere with the other apparatus of the tank, is preferably located at one side of the center, as shown. To the lowest point of the bottom of the container is secured a nipple 8 which may be attached to the container by means of crimping or riveting, or by means of solder as indicated at 10. The tubular member 9 is provided with a screw threaded end 11 which is adapted to screw into the nipple 8, as shown in Fig. 2. Through the upper part of the member 9 extends a bore 16 which, at its lower end widens out to form a valve chamber, the upper end of such chamber constituting a valve seat as indicated at 12. A valve member is adapted to engage the seat 12 and such member may be of any suitable shape, but is herein shown as a ball or sphere 13. This ball valve is retained in the valve chamber by means of a second tubular member 14, which is provided with exterior threads throughout its length, and which screws into the lower end of the tubular member 9. The member 14 is provided with a lower knurled head 15 by means of which it may be turned, and at its upper end is formed with a flaring mouth 20, forming a second valve seat. It will therefore be seen that the valve 13 plays between the two seats 12 and 20.

The tubular member 14 is provided throughout its length with a central bore 17 through which extends loosely a rod 18 which is attached at its upper end to the ball valve 13, the method of attachment shown being by means of screw threads. To the lower end of the rod 18 is attached a float which is preferably made of sheet metal, and, as shown, is in the form of a sphere 19.

The operation of the device will be apparent. The tank 4 being filled with disinfectant, the valve 13 is held against the upper seat 12 by means of the float 19, thus

preventing the escape of the disinfectant as long as the water in the flush tank stands above a certain predetermined minimum level. When the flushing operation takes place, the float 19 moves downwardly as the water level falls, and carries with it the ball 13, finally moving it from its seat 12 and permitting the escape of the disinfecting liquid. As the water level in the tank continues to fall, the float descends until the ball 13 engages the seat 20, thus closing the valve and shutting off the flow of the disinfectant. During the time that the valve is open the disinfectant escapes from the container and passes down through the bore 17, falling upon the rounded top of float 19, from which it is disseminated through the water of the tank. As the tank refills with water the reverse operation takes place, namely, the valve is first lifted from its seat 20 and then brought into engagement with the seat 12, thus permitting the disinfectant to escape during the movement of the valve from one seat to the other and thereby effecting the charging of the water in the tank with disinfectant. It is evident that by adjusting the tubular member 14 by means of the knurled end 15, the distance between the valve seats 12 and 20 can be varied as desired, and the quantity of disinfectant discharged at each operation thus regulated. The entire valve mechanism may be disconnected from the container when desired by unscrewing the same from the nipple 8.

It will thus be seen that I have provided a cheap and simple apparatus for automatically and intermittently supplying disinfectant to the water of the flush tank, such apparatus operating to feed the disinfectant into the tank whenever the water level therein lies between two predetermined points, and it is thought that the many advantages of my improved apparatus will be readily appreciated by those familiar with such matters.

What I claim is:—

1. The combination with a flush tank, of a disinfectant container associated therewith, and an automatic discharge device extending downwardly from the bottom of said container, such device comprising an imperforate tube, the bore of the lower portion of said tube being enlarged to form a valve chamber, and the upper end of such chamber constituting a valve seat, such enlarged bore being provided with internal

screw threads extending to the end of the tube, a similarly threaded plug fitting such enlarged bore and constituting another valve seat, the distance between said seats being adjustable by screwing said plug more or less into the bore of the tube, a valve located in said chamber between said seats said plug having an axial opening, a valve stem secured to said valve and extending downwardly through such opening, said stem being smaller than said opening, whereby a space for liquid flow is provided, said plug being of greater diameter than said valve, whereby such valve may be taken out by removing the plug, and a float carried by the lower end of said valve stem and adapted to move said valve into engagement with one or the other of said seats.

2. The combination with a flush tank, of a disinfectant container associated therewith, and an automatic discharge device extending downwardly from the bottom of said container, such device comprising a socket secured to the bottom of said container, such socket being internally screw-threaded, an imperforate tube having its upper end screw threaded into said socket, the bore of the lower portion of said tube being enlarged to form a valve chamber, and the upper end of such chamber constituting a valve seat, such enlarged bore being provided with internal screw threads extending to the end of the tube, a similarly threaded plug fitting such enlarged bore and constituting another valve seat, the distance between said seats being adjustable by screwing said plug more or less into the bore of the tube, a valve located in said chamber between said seats, said plug having an axial opening, a valve stem secured to said valve and extending downwardly through such opening, said stem being smaller than said opening, whereby a space for liquid flow is provided, said plug being of greater diameter than said valve, whereby such valve may be taken out by removing the plug, and a float carried by the lower end of said valve stem and adapted to move said valve into engagement with one or the other of said seats.

In testimony whereof I affix my signature in presence of two witnesses.

FORBES R. BENSINGER.

Witnesses:

WM. B. GRIFFEN,  
B. F. GAULT.