

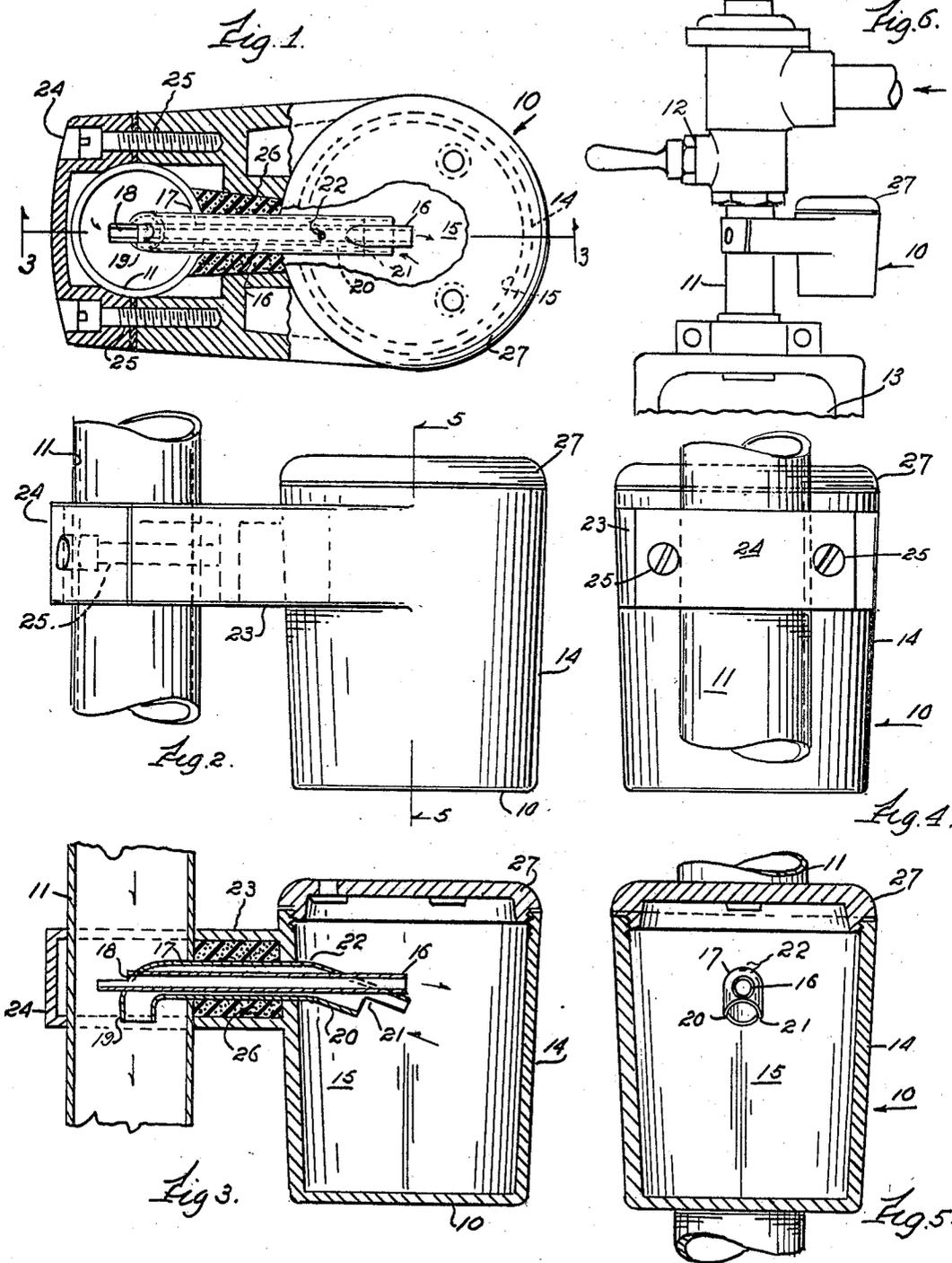
Dec. 9, 1969

C. J. TIETEMA ET AL

3,482,269

CHEMICAL DISPENSER

Filed March 6, 1968



Inventors.
Casper J. Tietema
Donald M. Rodak.
by James R. McKnight
Attorney.

1

2

3,482,269

CHEMICAL DISPENSER

Casper J. Tietema, Chicago, and Donald M. Rodak, Hanover Park, Ill., assignors to Lien Chemical Co., Franklin Park, Ill., a corporation of Illinois
Continuation-in-part of application Ser. No. 664,845, Aug. 31, 1967. This application Mar. 6, 1968, Ser. No. 710,868

Int. Cl. E03d 9/03

U.S. Cl. 4—225

1 Claim

ABSTRACT OF THE DISCLOSURE

A dispenser of a chemical into a flush valve operated water pipe leading to a urinal or toilet, in which a smaller water inlet tube leads from the water pipe to a container containing the chemical, and a separate larger outlet tube carries the water mixed with the chemical in the container to flow to the water pipe to exit to the urinal or toilet, substantially simultaneously, with the outlet tube so constructed that after-flow and streaking are eliminated, and the smaller inlet tube extending within the larger outlet tube.

This invention relates to a dispenser of a chemical into a water feed line such as that leading from a flush valve to a urinal or toilet.

This is a continuation-in-part application of our pending application, Ser. No. 664,845, filed Aug. 31, 1967, on Chemical Dispenser, in which one new added feature is on partial enclosure of a smaller inlet tube within a larger outlet tube.

Among the objects of our invention is to provide an improved construction in which a separate tube is used to supply the water from the supply pipe to a chemical chamber and another tube is used for transferring the chemical water mixture back to the tail pipe, one tube extending within the other so that only a single opening is necessary in each of the tail pipe and the body member.

Another object of our invention is to insure substantially simultaneous entrance of water into the chemical chamber and exit of chemical water therefrom to eliminate streaking.

Another object of our invention is improved control of the amount of chemical being dispensed due to the construction of the inlet tube.

Another object of our invention is to provide a smaller inlet tube positioned within the portions of the larger outlet tube where the outlet tube enters the tail pipe and the container, so that only one opening in each of the tail pipe and the container is necessary to receive both the inlet tube and the outlet tube.

Our invention also has such other objects, advantages and capabilities as will later more fully appear and which are inherently possessed by this invention.

While we have shown in the accompanying drawings a preferred embodiment of our invention, yet it is to be understood that the same is susceptible of modification and change without departing from the spirit of our invention.

Referring to the drawings, FIG. 1 is a top plan view, partly in section of our chemical dispenser; FIG. 2 is a side elevational view; FIG. 3 is a view on line 3—3 of FIG. 1; FIG. 4 is a vertical rear view; and FIG. 5 is a view on line 5—5 of FIG. 2 of the same; and FIG. 6 is a vertical view showing our chemical dispenser in connection with a tail pipe, valve and urinal.

Our chemical dispenser 10 is connected to a water supply and tail pipe 11 below a manually operable flush valve 12, said pipe leading to a urinal or toilet 13.

In the embodiment selected to illustrate our invention, our dispenser 10 comprises a body member 14, within which is a hollow chamber 15 connecting a chemical mixture including detergents, deodorants, water conditioners and blue coloring material, mixable with water. Connecting chamber 15 with the interior of pipe 11 are two tubes 16 and 17. Inlet tube 16 is straight and serves to divert some of the clear water flowing through pipe 11 into chamber 15. This clear water, in turn, mixes with the chemical mixture in chamber 15. The water chemical solution is returned to pipe 11 by means of outlet tube 17.

In FIG. 3, the details of construction of the inlet tube 16 are shown. It is to be noted that its inner portion lying within pipe 11 has a terminal section from which the upper half has been cut away or notched as shown at 18.

The outlet tube 17, as detailed in FIG. 3, is shown as downwardly curved at 19 where it is inside pipe 11 leading to the urinal or toilet. Portion 20 of tube 17, opposite to end 19 and within chamber 15, which contains the chemical mixture, is angled downwardly. The terminal end of this angled portion 20 has a notched orifice 21, and at the upper part of said angled portion is a small orifice 22 which serves as a vacuum breaker.

Inlet tube 16 is smaller in cross section than outlet tube 17. Inlet tube 16 extends within those portions of outlet tube 17 where it enters tail pipe 11 and body member 14, so that only one opening is necessary in each of tail pipe 11 and body member 14 to permit entry of both tubes 16 and 17. Inlet tube 16 adjacent one end extends through outlet tube 17 at the upper portion of curve 19 into tail pipe 11. Adjacent its other end, tube 16 extends through outlet tube 17 at angled portion 20 into chamber 15 of body member 14. Since inlet tube 16 is within outlet tube 17 where outlet tube 17 extends into tail pipe 11 and body member 14, only one opening is necessary in each of tail pipe 11 and body member 14 to receive both inlet tube 16 and outlet tube 17.

From the side of body member 14, a support member 23 projects laterally and terminates in a recess that is adapted partially to encompass tail pipe 11. A second support member 24 encompasses the opposite side of tail pipe 11 and is fastened to support member 23 by screws 25 to clamp said two support members against the tail pipe 11 and firmly support dispenser 10 in position. Mounted within support member 23 is a compressible and resilient member 26 which supports outlet tube 17 which extends therethrough. Said tubes extend from hollow chamber 15 to within tail pipe 11.

A removable cover 27 is provided for the open top of body member 14.

In use, when the flow valve 12 is manually operated, water from a suitable source of supply is provided to tail pipe 11 for a brief measured period of time, as determined by the control setting on the valve.

The unique features of our invention, embodying a separate tube 16 to supply water to chamber 15, and another tube 17 for transferring the chemical-water mixture back into the pipe, offer certain advantages over other dispensing devices in the prior art.

In setting forth these advantages, it is to be observed that since two tubes are involved, one, 16, for the inlet to, and one 17, for the outlet from the chamber 15, that the chemical solution is dispensed from the chamber through tube 17 substantially simultaneously with the clear water entering through the tube 16.

A common fault of devices in the prior art has been that the dispensing of the chemical has not been simultaneous with the entering of the clear water. Normally, the chemical being dispensed contains detergents and water conditioners, as well as blue coloring. In the prior art, the detergent mixture had not been dispensed prior to the end of the flush cycle, so that the blue coloring continued

to drip through the pipe 11 into the urinal or toilet, after the water flow had ceased. This resulted, in the prior art, in objectionable blue streaking and staining on the toilet or urinal fixture.

Owing to the fact that in our embodiment the water flows into and out of chamber 15 substantially simultaneously, the flow of chemical is terminated prior to the end of the flush cycle and thus streaking of blue coloring is eliminated. The details of the features in outlet tube 17 which accounts for this phenomenon are three: (1) the construction of the orifice 21 at the end of tube 17 inside chamber 15; (2) the small opening 22 at the upper surface of this tube, which serves as a vacuum breaker; and (3) the downward angle 20 of outlet tube 17 which allows any detergent mixture therein to drain back into chamber 15 upon termination of the flush cycle. This eliminates afterflow, streaking and staining.

Having thus described our invention, we claim:

1. A dispenser for introducing a chemical into a flush valve operated water pipe leading to a urinal or toilet comprising a container housing a water mixable chemical, a support member for maintaining said container in relationship with the water pipe, a compressible and resilient member mounted within said support member, a water inlet tube extending from the water pipe to the upper portion of said container and carrying water from the water pipe to said container, the receiving end of said inlet tube positioned within the water pipe and having its upper half cut away or notched for controlled reception therein of water, and a separate outlet tube extending from a lower portion of said container to the water pipe, said inlet tube being straight and smaller in cross section than said outlet tube and extending within those portions of said outlet tube where it enters the water pipe and said container so that only one opening is necessary in each

of the water pipe and said container to permit entry of both said inlet tube and said outlet tube, said outlet tube rotatably mounted within said compressible and resilient member and carrying water mixed with chemical in said container from the container to the water pipe for exit to the urinal or toilet, said outlet tube having an inner portion positioned entirely within said container and angled downwardly to a receiving end, said inner portion having an orifice vacuum breaker within said container permitting water mixed with chemical to drain back into the container upon the termination of any flushing cycle.

References Cited

UNITED STATES PATENTS

131,422	9/1872	Brown	4-225
341,234	5/1886	Haigh	4-225
521,411	6/1894	Johnson	4-225
669,572	3/1901	Blackmore	4-225
1,127,207	2/1915	Doran	4-225
3,060,456	10/1962	Jacobs	4-225
3,118,462	1/1964	Pannutti	4-224

FOREIGN PATENTS

5,859	2/1897	Great Britain.
16,646	5/1898	Great Britain.
24,258	10/1898	Great Britain.
125,273	4/1919	Great Britain.
692,495	6/1953	Great Britain.
911,118	5/1954	Germany.
252,096	9/1948	Switzerland.

LAVERNE D. GEIGER, Primary Examiner

DONALD B. MASSENBERG, Assistant Examiner