

United States Patent

[11] 3,604,020

[72] Inventor **Nickolaus Moisa**
301 Madison St., Yorkville, Ill. 60560
 [21] Appl. No. **836,263**
 [22] Filed **June 25, 1969**
 [45] Patented **Sept. 14, 1971**

3,032,244 5/1962 Zeabari 224/5
 3,121,236 2/1964 Yadro et al. 4/228

FOREIGN PATENTS

281,853 12/1927 Great Britain 4/228
 717,034 8/1965 Canada 252/106
 1,061,260 4/1954 France 252/106
 1,152,903 2/1958 France 252/106

[54] **TOILET TANK SANITIZING DISPENSER**
8 Claims, 6 Drawing Figs.

[52] U.S. Cl. 4/228
 [51] Int. Cl. **E03d 9/02**
 [50] Field of Search 4/228;
 24/3.3, 3.4, 16, 17.1, 208.1, 208.2, 208.3; 252/99,
 106

Primary Examiner—Laverne D. Geiger
Assistant Examiner—Donald S. Massenberg
Attorney—Dressler, Goldsmith, Clement & Gordon

References Cited

UNITED STATES PATENTS

1,557,266 10/1925 Moore 167/70
 1,816,049 7/1931 Larner 206/37
 2,320,280 5/1943 Kalusdian 252/102
 2,426,484 8/1947 Buffenbarger 224/22
 2,807,807 10/1957 Harper 4/228

ABSTRACT: A dispenser package for sanitizing toilet tanks and bowls including a body portion suspendible below normal water level in a toilet tank and a strap hanger for so suspending the body portion. The body portion contains a sanitizing formulation. The package provides a pair of openings for circulation of water through the package. The formulation contains a relatively insoluble dispenser aid such as ground gravel to maintain the formulation's water permeability during the life of the package.

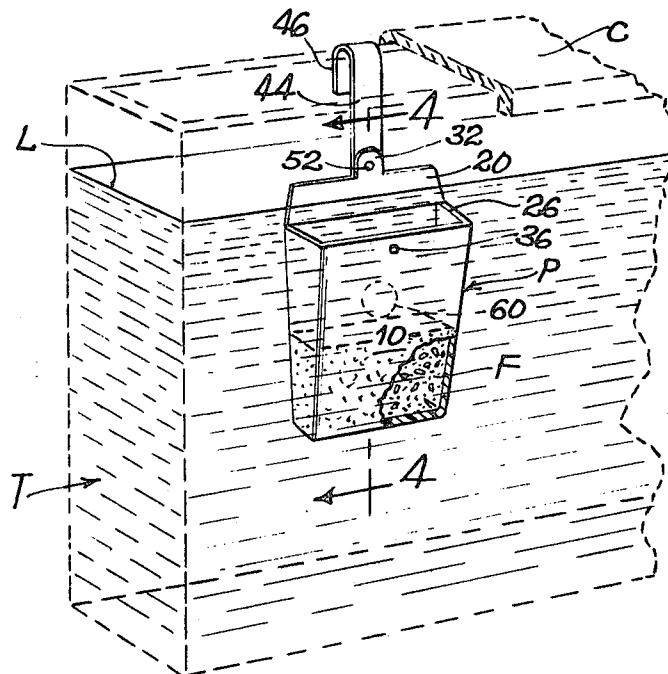


FIG. 1

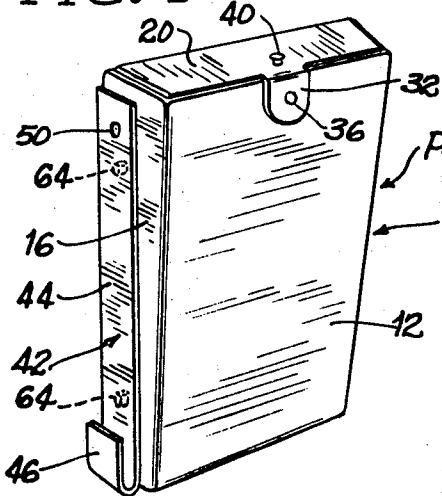


FIG. 2

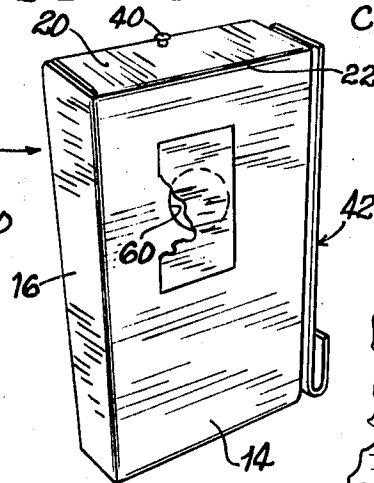


FIG. 4

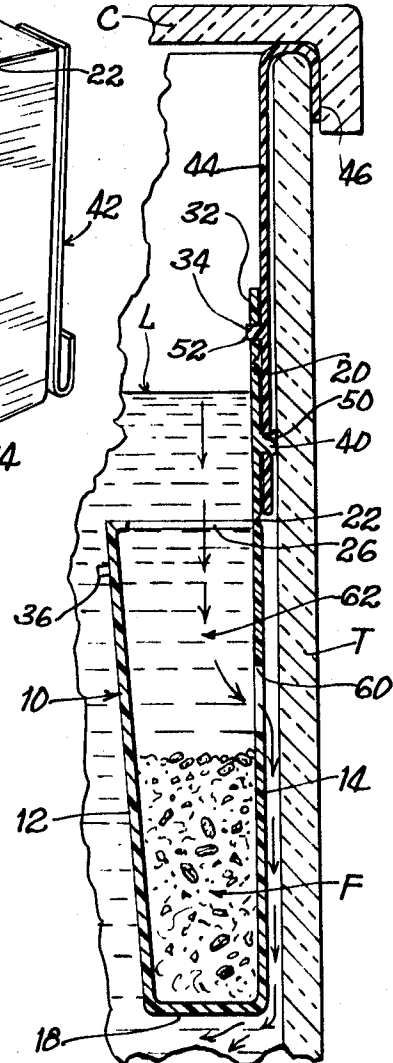


FIG. 3

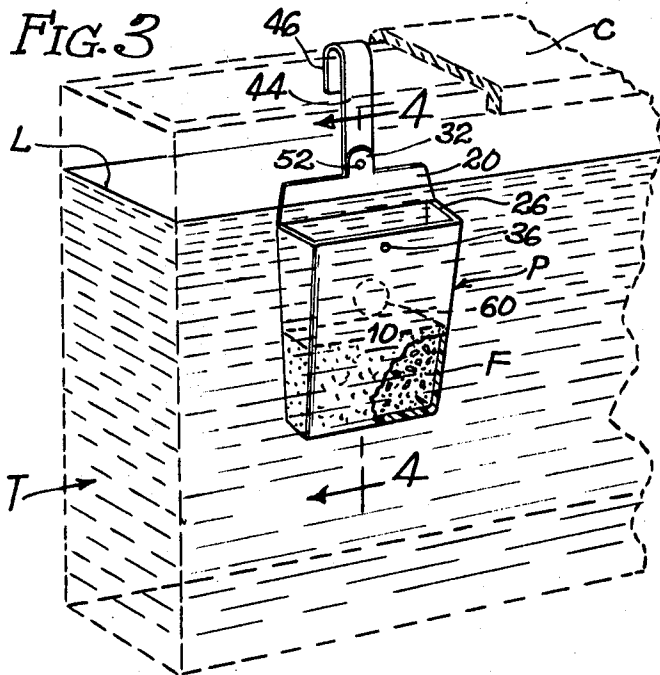


FIG. 5

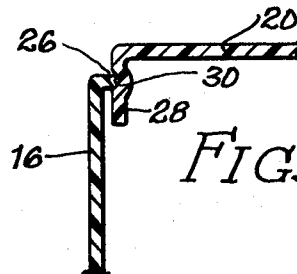
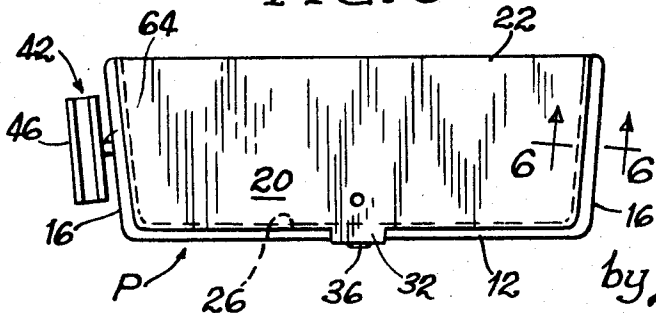


FIG. 6

INVENTOR

Nickolaus Moisa

by Dresser Goldsmith,
Clement & Gordon Att'ys

TOILET TANK SANITIZING DISPENSER

This invention relates to a toilet-sanitizing dispenser package which is adapted to dispense a sanitizing composition intermittently and upon each actuation of an associated toilet. The dispenser package is constructed to assure the dispensing of a desired dose of the contained formulation upon each actuation of the toilet whereby the toilet bowl and toilet tank each are sanitized, deodorized and cleaned upon each actuation.

The use of sanitizing and deodorant formulations for cleaning toilets are well known. However, the dispenser package of this invention provides many advantages not heretofore attainable and provides an improved means for facilitating the automatic dispensing of a uniform or suitable dose of the sanitizing, deodorizing and bleaching formulation each time the toilet is used.

In accordance with this invention a dispenser package adapted to be suspended in a toilet tank is provided. Preferably, it is only partially filled with the sanitizing formulation to be described, and in the preferred embodiment to be described is filled to about 50 percent of its height. The dispenser is provided with at least a pair of spaced openings, one adjacent the top of the package and the other slightly above the top level of the chemical formulation and below the top of the package.

In use and when suspended in a toilet tank below the normal water level of the tank, water will pass into the dispenser package through that spaced pair of openings. When the tank is flushed, the water level descends below the dispenser, and the chemicals in the dispenser package which have been activated and dissolved by the tank water rapidly discharge through the lowermost opening and into the tank from which the chemicals flush into the toilet bowl where they clean, disinfect, bleach and sanitize the bowl. As the tank refills, water reenters the lower opening in the dispenser package and when the water level reaches the top level of the dispenser package it rapidly and completely fills the open chamber in the dispenser container. Between flushings, the chemicals in the container dissolve into the water therein and disperse slowly into the tank thereby also sanitizing and maintaining the cleanliness of the tank.

A characteristic of the formulation in the dispenser package is that it maintains an open matrix, i.e., remains relatively porous. Although the chemicals themselves tend to become pasty and thus tend to cake, substantially reducing the speed of dissolution of the chemicals into the water in the dispenser package, hence into the tank itself, in accordance with this invention caking to the point where the chemical formulation is relatively impervious is prevented. To that end, a granular dispensing aid is incorporated in the chemical formulation, which granular dispensing aid is preferably insoluble in water. By intermixing the dispensing aid with the chemical formulation, the formulation is maintained in a relatively porous state, thereby increasing the speed at which the chemicals dissolve, to assure a relatively constant dissolution rate for the chemicals during the lifetime of the dispenser package.

A formulation found to be particularly effective for use in a dispenser of the class and type described herein, includes granular calcium hypochlorite, granular trisodium phosphate, salt pellets and ground gravel. A particular embodiment which has been found to be especially effective is the following:

Calcium hypochlorite	4 oz.
Trisodium phosphate	1/50 oz.
Ground gravel ca. 1/16 inch max.)	½ oz.
Sodium Chloride pellets	4 pellets

When thoroughly mixed and packaged in a dispenser of the type described, the dispenser package has been found to be highly effective.

In addition to maintaining an open matrix in the sanitizing formulation, the dispenser aid tends to stabilize the dispenser package by weighting it downwardly in the toilet tank.

In accordance with this invention a particularly advantageous dispenser package comprises a main body portion and means for suspending the main body portion from a toilet tank wall, the suspending means and the main body portion defining cooperating releasable connecting means for stabilizing the main body portion in the toilet tank and below the normal water level therein, the main body portion defining a pair of vertically spaced openings therein, each being above the level of a sanitizing formulation contained therein, and in which the sanitizing formation contains a water-insoluble dispensing aid which maintains an open matrix in the formulation and which further assists in stabilizing the dispenser package in the toilet tank.

Further advantages and objects of this invention will become apparent from the following description and drawings of which

FIG. 1 is a front perspective view of a closed dispenser package of this invention;

FIG. 2 is a rear perspective view of the closed dispenser package of FIG. 1;

FIG. 3 is a front perspective view of the opened dispenser package of FIG. 1 positioned in a toilet tank;

FIG. 4 is a vertical sectional view taken substantially along line 4—4 of FIG. 3;

FIG. 5 is a top plan view of FIG. 1; and

FIG. 6 is an enlarged fragmentary vertical sectional view taken substantially along line 6—6 of FIG. 5.

Referring now to FIG. 3, a dispenser package P of this invention is shown to be suspended in a toilet tank T below the normal water level L. The toilet which forms no part of this invention per se, includes tank T, a tank cover C and any conventional flushing mechanism and associated bowl (not shown).

As seen in FIGS. 1 and 2, the dispenser package P includes a container or elongate, vertically disposed, main body portion 10 comprising a front wall 12, a backwall 14, sidewalls 16 and a bottom wall 18. These may be integrally formed as by molding of a plastic material which is resistant to the contained sanitizing formulation and which is water impervious, for example of polystyrene. At the top of the main body portion a cover flap 20 is provided. Flap 20 is preferably integrally formed with backwall 14 and is joined thereto along a hinge line 22 which is formed by flexing cover flap 20 downwardly to the position illustrated in FIGS. 1 and 2.

Adjacent their tops front wall 12 and sidewalls 16 define an inwardly projecting ledge 26 which terminates adjacent hinge line 22. Ledge 26 is formed and proportioned to cooperate with cover flap 20. As is best seen in FIGS. 5 and 6, cover flap 20 defines a depending peripheral rim 28 defining a concave notch 30. Notch 30 is proportioned to receive the inner edge of ledge 26, whereby the cover flap 20 and the rim 28 are interlocked to resist displacement of the cover flap. This interlocking mechanism serves to secure the cover flap in a closed position until the dispenser package P is to be used.

To more positively maintain the interlock between cover flap 20 and the front and sidewalls of the main body portion, cover flap 20 is provided with an integrally formed hinged tab 32. Tab 32 defines an aperture 34 proportioned to snugly and grippingly receive a lock pin 36. Pin 36 preferably is enlarged at its outermost end and is connected by a shank of slightly reduced cross section to the front wall 12 of the main body 10. When the enlarged end of pin 36 is forced through aperture 34, the enlarged end resists removal of the tab from its interlocked engagement with pin 36 thereby to retain cover flap 20 in its closed position.

Desirably, cover flap 20 is provided with a further pin 40 which is shaped like pin 36 to facilitate interlocking with an aperture in a hanger means which will now be described.

As stated, the dispenser package is desirably suspended in a toilet tank T. To that end a hanger means is provided which includes a hanger member 42. Hanger member 42 comprises a strap segment 44 and a hook segment 46 at one end thereof. Hook segment is proportioned to receive and to be hung from the upper edge of one of the vertical walls of the toilet tank T,

but is narrow enough not to interfere with the normal seating of the toilet tank cover C.

At the lower end of the strap segment 44 remote from the hook segment 46, pin and aperture means are provided for connecting the hanger member 42 to the main body portion 10 of the dispenser package P. Thus, strap element 44 defines a strap aperture 50 and a strap pin 52. Strap aperture 50 is proportioned to receive cover flap pin 40 in an interlocking relationship (as previously described respecting aperture 34 and pin 36) and strap pin 52 is proportioned to cooperatively interlock with tab aperture 34 after the tab has been disengaged from its shipping and storage position and the cover flap 20 has been opened to the position of FIG. 3. The existence of the cooperating pairs of pins and apertures 40, 50 and 52, 34, respectively, serves to provide a firm and stable interconnection between the hanger member 42 and the main body portion 10 when the dispenser package is disposed in the toilet tank and resists, among other things, the tendency of the dispenser package P to wobble, pivot or float in the tank. In other words, the dispenser assembly is thus made relatively rigid vertically and because hook segment 46 is captured, so to speak, between the tank edge on which it is supported and the overlying cover C, the dispenser stays in the desired vertical position below the water level in the tank at all times.

To facilitate and insure a relatively constant discharge of sanitizing material from the dispenser and to assure rapid discharge of that material when the tank T is evacuated by flushing, opening means are defined by the main body portion both at its top (the top opening circumscribed by ledge 26 and hinge line 22) and below its top. In the embodiment illustrated, the lower opening means is a circular discharge aperture 60 which is spaced well below the top of the dispenser and slightly above the level of the contained sanitizing formulation. Aperture 60 may be formed during molding and covered prior to sale as by sealing tape, or may be formed frangibly, as by a partial score line, which may then be broken out by a user immediately prior to use.

It will be clear that the discharge aperture 60 will facilitate discharge, upon flushing of the toilet, of the contents of the main body portion of the dispenser package above the level of the lowermost edge of the aperture, i.e., from the chamber 62 defined by the dispenser between the level of the contained sanitizing formulation and the top opening in the package. The chamber 62 which is in open flow communication with the tank through aperture 60 and the open top in the package in use, is filled with water after each flushing, initially through aperture 60 and then, as the water level rises still further, through the opening at the top of the dispenser. The provision of the spaced openings further enhances circulation of water in the treatment section of the dispenser thereby providing a small amount of sanitizing solution in the tank between flushings.

The dispenser package itself prior to use is preferably provided with a frangibly connected hanger member 42. As best seen in FIG. 5, hanger member 42 is connected to one of the sidewalls 16 by a plurality of thin weak arms 64. Arms 64 are integrally molded with a sidewall 16 and hanger member 42 and are easily broken by a user when the dispenser package P is to be suspended in its utilitarian position in a toilet tank. The integral molding of these is advantageous from a fabrication standpoint and assures delivery to a customer of all of the components constituting the suspendible dispenser assembly of this invention.

The dispenser package, as stated, includes a sanitizing formulation F, in its lower portion. As used herein, the term "sanitizing" is intended to connote various functions of a toilet tank treating chemical formulation and contemplates disinfecting, deodorizing, bleaching and like functions. It also contemplates the reduction of iron deposits and the prevention of algae growth. While a variety of chemicals will serve all or some of those functions and many of the chemicals suitable for those purposes are known, a particularly advantageous formulation for many of those purposes is contemplated for use in connection with this invention.

The sanitizing formulation is desirably in granular form to enhance extraction of a desired dose of sanitizing chemical from the main body of the formulation. The granular formulation admits water into the main body of the formulation much more rapidly than pasty or tablet formulations. In addition to the granular active sanitizing chemicals, a dispenser aid is thoroughly intermixed with those chemicals to maintain the granular chemicals in an open or permeable matrix, whereby the speed or rate of extraction, i.e., the dissolving of the chemicals, remains relatively constant during the life of the dispenser package.

To that end a relatively insoluble dispenser aid is provided which in one embodiment comprises salt pellets and insoluble ground gravel. Although the salt pellets (sodium chloride) are soluble in water; their size is such that they do not dissolve completely for an extended period of time. The salt pellets contemplated are conventional pellets commonly used in domestic water softeners (approximately $\frac{1}{2}$ inch $\times$ $\frac{1}{2}$ inch $\times$ $\frac{3}{8}$ inch and somewhat pillow shaped). The principal dispenser aid is the ground gravel which is quite irregular in shape and is preferably no more than about one-sixteenth inch in any dimension. The insoluble gravel serves to maintain channels in formulation T through which water may pass and tends to reduce caking of the sanitizing and treatment chemicals. Although ground gravel has been found to be particularly effective as the dispenser aid, other particulate and water insoluble granular materials may be used to accomplish the stated purpose. It has also been found that the water-insoluble dispenser aid assists in stabilizing the dispenser package in the toilet tank.

Sanitizing chemicals found to provide a highly desirable sanitizing, deodorizing, disinfecting and bleaching solution comprise calcium hypochlorite and trisodium phosphate. The action of these chemicals is enhanced, it has been found, by the presence of the aforementioned salt pellets. This formulation has been found to kill algae which sometimes forms in toilet tanks, prevents rust deposits in toilet tanks and bowls and deodorizes and sanitizes toilet bowls. It further serves to maintain toilet bowls in a clean state, minimizing the formation of frequently encountered deposits therein.

In a presently preferred embodiment, a formulation adapted to fill a dispenser package P approximately half full, comprises four ounces of calcium hypochlorite, one-fiftieth ounce of trisodium phosphate, one-half ounce of ground gravel and four salt pellets of the size heretofore described. The calcium hypochlorite and trisodium phosphate are in commercially available granular form and the gravel is ground to the size indicated above. It has been found that dispensing of the chemicals remains relatively constant throughout the life of the dispenser package, and in any event dispensing continuously occurs rapidly enough to be effective throughout the active life of the dispenser package.

What is claimed is:

1. A dispenser package adapted to be suspended in a toilet tank below the normal water level in said tank for dispensing sanitizing chemicals into said toilet tank, a hollow elongate container partially filled with a sanitizing formulation, a hingedly connected cover flap and tab at the top of the container and pivoted from a closed to an open position, hanger means formed with said container and connected to said container by frangible arms, said hollow container and said hanger means defining cooperable releasable connecting means for securing said container and said hanger means to each other, and said hanger means further defining a hook segment by which said container may be suspended from a toilet tank wall, said hanger means being releasably attachable to said cover flap and tab by means of said releasable connecting means, said package having a plurality of openings therein at vertically spaced locations.

2. In the dispenser of claim 1 in which sanitizing formulation comprises a water-insoluble granular dispenser aid to provide an open matrix in said formulation and to assist in stabilizing the container in said toilet tank.

5

6

3. In the dispenser package of claim 1 in which said sanitizing formulation fills only about one-half of said container and includes a water-insoluble dispensing aid.

4. In the dispenser package of claim 3 in which one of said openings is below the top of the container and above the level of said sanitizing formulation.

5. In the dispenser of claim 2 in which said dispenser aid comprises salt pellets.

6. In the dispenser of claim 2 in which said dispenser aid

comprises water-insoluble granular material.

7. In the dispenser of claim 2 in which said dispenser aid is ground gravel having no dimension greater than about one-sixteenth inch and in which said sanitizing formulation comprises trisodium phosphate and calcium hypochlorite.

8. In the dispenser of claim 7 in which said sanitizing formulation further includes salt pellets.

10

15

20

25

30

35

40

45

50

55

60

65

70

75