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Gore et al.

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[45] **Jan. 2, 1973**

[54] **FLAPPER FLUSH VALVE**

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[73] Assignee: **Beatrice Foods Company,** Skokie, Ill.

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[52] **U.S. Cl.** .....**4/57 P,** 4/56

[51] **Int. Cl.** **E03d 1/34**

[58] **Field of Search** .....4/56, 57, 67, 57 P

[56] **References Cited**

UNITED STATES PATENTS

2,767,406	10/1956	Bennett	4/57 P
2,787,004	4/1957	Zinkil et al.	4/57 P
3,167,787	2/1965	Connealy	4/57 P
3,154,794	11/1964	Antunez, Jr.	4/57 P

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[57] **ABSTRACT**

A flapper flush valve comprising an integral unitary flexible resilient valve unit provided with means whereby it may be anchored to fit around the overflow tube of a toilet tank, or may be connected to the projections or trunions on an overflow tube, or may be anchored to a support member other than the overflow tube.

6 Claims, 7 Drawing Figures

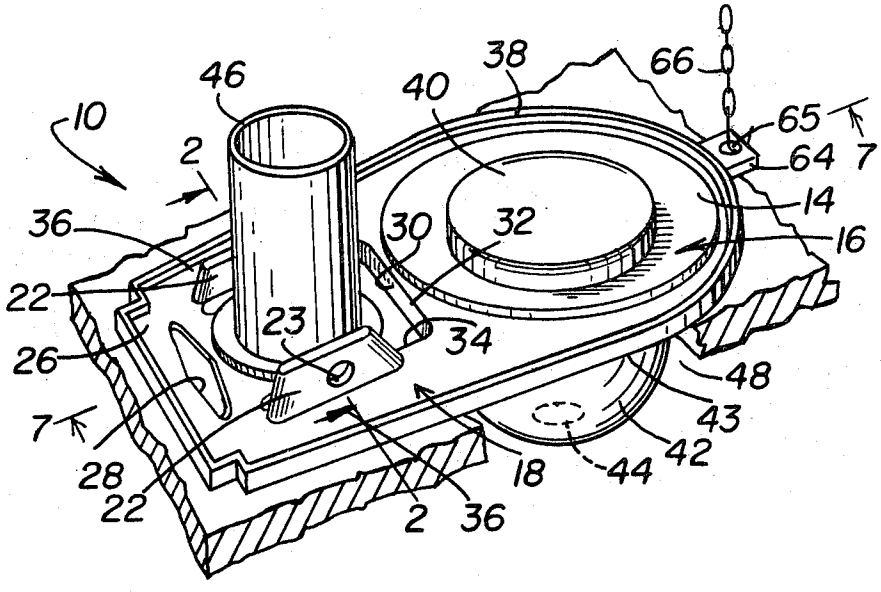


FIG. 1

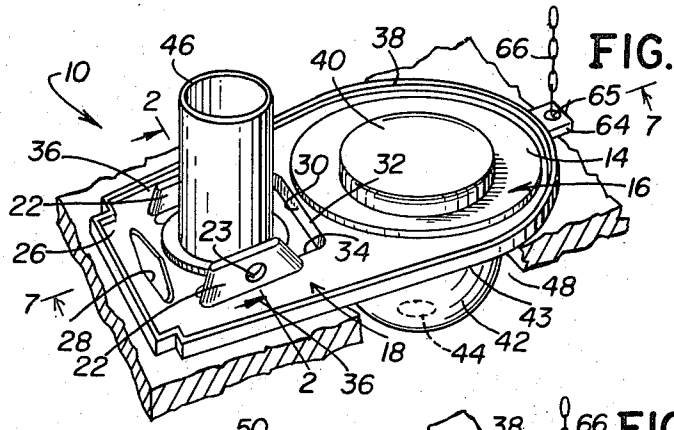


FIG. 2

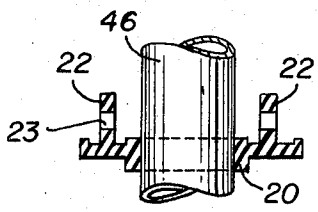


FIG. 3

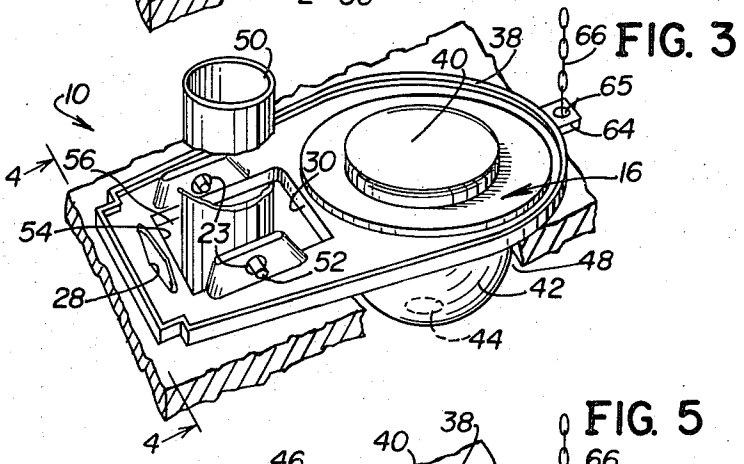


FIG. 4

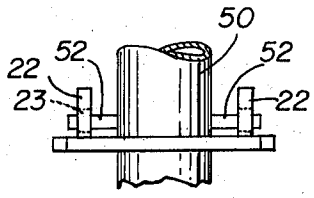


FIG. 5

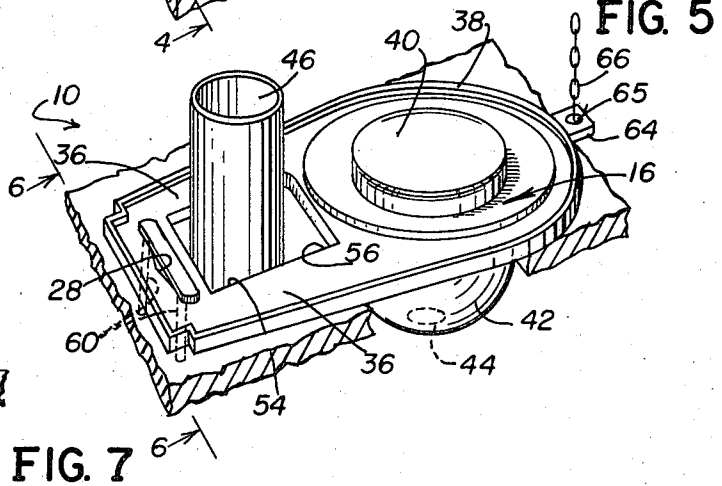


FIG. 6

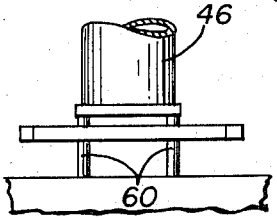
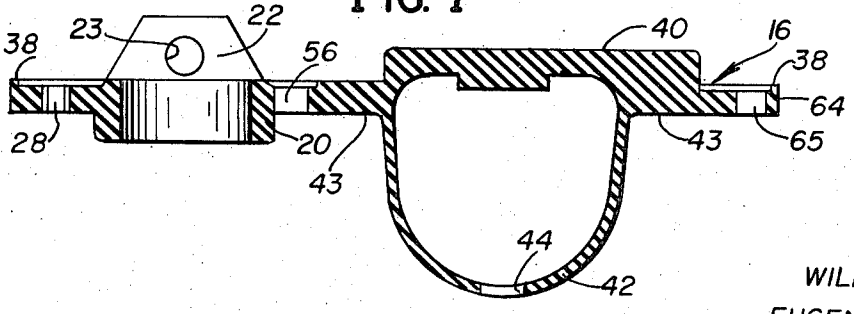


FIG. 7



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FLAPPER FLUSH VALVE

BRIEF SUMMARY OF THE INVENTION

The prior art discloses various types of flapper flush valves which have means whereby they fit over and around the overflow tube of a toilet tank, while others are provided with means for attachment to the projections or trunions on an overflow tube, and still others are provided with means whereby they are attached to and anchored to support means in the toilet tank, other than the overflow tube. Each of these flapper valves are therefore attached in the toilet tank according to their particular construction and this necessitates a supply of flapper ball valves of each of the various types to fit and be accommodated in a particular tank, thus requiring a manufacturer to build three or more different types of flapper valves and requires the supplier to stock and maintain an inventory of each of the various types of flapper valves, all of which adds to the cost of manufacture and necessitates maintaining an inventory of different types of flapper valves.

An object of this invention therefore is to provide a flapper flush valve which in one construction can be made so that it can be accommodated and attached to any type of toilet tank, that is, it may be connected by slipping same over an overflow tube, or it may be connected to the projections or trunions on the on the overflow tube, or it may be connected to attaching means in the toilet tank other than to the overflow tube.

Another object of this invention is to provide a flapper flush valve which is universally adaptable for mounting in the various toilet tanks so that it could be used in any one of such toilet tanks.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a view of the flapper valve of this invention which has been slipped over the overflow tube.

FIG. 2 is a view taken on line 2—2 of FIG. 1.

FIG. 3 is a view showing the flapper valve attached to pins or trunions on the overflow tube with the sleeve portion of the unit cut or removed from the valve.

FIG. 4 is a view taken on line 4—4 of FIG. 3.

FIG. 5 is a view of the flapper valve attached to a post in the toilet tank with the sleeve and the upwardly extending tabs removed.

FIG. 6 is a view taken on line 6—6 of FIG. 5, and

FIG. 7 is a sectional view taken on line 7—7 of FIG. 1 but omitting the overflow tube.

The flapper flush valve unit forming this invention is generally designated by the numeral 10 and is formed or molded as a single unitary construction of rubber or like material which is flexible and resilient, and comprises a body portion 12 which has a front portion 14 provided with a closure 16, an intermediate portion 18 which has the sleeve 20, spaced upwardly extending tabs 22 adjacent to but spaced from the sleeve 20, and at the rear portion 26 has a transversely extending slot 28. At the intermediate portion 18 of the body around a portion of the sleeve 20 there is a U-shaped cutout or opening 30 which extends forwardly of the sleeve as at 32 and to the opposite sides 34 of the sleeve. The sides 34 of the cutout are parallel to but inwardly of the tabs 22. With the cutout or opening 30, the intermediate

portion 18 of the body is provided with two spaced flexible side hinge arms 36 which connect the front portion 14 to the rear portion 26. A peripheral stiffening bead 38 is molded on the upper surface of the body portion and extends completely around the entire body portion.

The closure member 16 has an annular raised portion 40 extending upwardly of the top of the body, and a depending hollow float bulb 42 which is open as at 44 at the bottom thereof. The float bulb 42 serves as a flotation chamber and the opening 44 may be closed by a plug, not shown, when desired. The underside of the front portion of the body surrounding the float bulb is smooth and unobstructed and said surrounding surface forms a sealing portion 43 so that when the float bulb is received in the usual flush valve fitting of a conventional toilet flush tank the sealing portion 43 will engage the surrounding surface of the valve fitting and seal it off to close the outlet of the water from the flush tank.

Projecting forwardly of the front portion 14 and formed integrally therewith is a tab 64 having an opening 65 to which is attached a flexible chain 66 for lifting the closure from the closed position by means of the usual operation. The spaced tabs 22 are provided with transversely extending alined openings 23.

As shown in FIGS. 1 and 2, the conventional toilet tank has a conventional overflow tube 46 and a tank outlet valve fitting generally indicated at 48. In this type of construction the sleeve 20 of the unit is slipped over the overflow tube 46 and the float bulb 42 would be positioned within the outlet valve fitting 48. The unit is thus firmly anchored to the conventional overflow pipe and is operated by lifting the front portion 14 by means of the chain 46 which lifts the float bulb 42 from the valve fitting 48 to allow the water in the tank to flush the toilet, after which the float bulb will again seat in the valve fitting 48 and the sealing portion 43 will seal the outlet.

In tanks such as shown in FIGS. 3 and 4, the overflow tube 50 is provided with a pair of oppositely extending pins or trunions 52. In this instance the sleeve 20 may be cut off from the unit by cutting along the line 54 to provide with the U-shaped opening 30 a rectangular-shaped opening 56 which will surround the overflow tube but will be free from contact therewith. The tab openings 23 will then be positioned on the pins 52 to secure the unit in proper anchored position.

In other types of toilet flush tanks, such as shown in FIGS. 5 and 6, where the unit cannot be secured to the overflow tube it may be secured by means of the elongated slot 28 at the rear of the member. In such tanks there are anchoring posts or uprights, generally designated by the numeral 60, which are usually provided on the bottom of the tank, and the elongated slot 28 is positioned over and on such posts to thus firmly anchor the flapper flush valve thereto. In such instances the sleeve 20 is cut away, as previously described, and the tabs 22 may also be cut away, as shown in FIG. 5, however, even if the tabs are left, the rectangular openings 56 formed by the cut-away sleeve will prevent interference with the overflow tube in the tank.

The foregoing describes the three methods of attachment by means of this invention and, as can be ap-

preciated, the flapper flush valve which incorporates all of the foregoing methods of attachment can be each individually used depending upon whichever type of attachment is applicable under the particular circumstances. Thus, the invention herein lends itself to a universality of attachment to various types of toilet flush tanks.

What is claim is:

1. A unitary formed flapper flush valve for use in a toilet tank having an outlet opening for the water to pass to the toilet from the tank and an overflow tube, said unitary flapper flush valve can be accommodated by any one of three types of tanks and comprising a front portion having a float bulb adapted to seat in the outlet opening, an intermediate portion having an annular opening and a pair of spaced tabs with openings therein which tabs extend on the opposite sides of the annular opening, said annular opening and said tabs adapted to be selectively used for either connecting the annular opening to the overflow tube or connecting the tabs through their openings to the trunions or pins on the overflow pipe, said unitary flapper valve having a rear portion provided with an opening whereby said flapper valve may be selectively attached to an anchoring member in said tank.

2. A structure as set forth in claim 1 in which the annular opening has a sleeve portion whereby the sleeve is accommodated on the overflow tube.

3. A structure as set forth in claim 1 in which the opening in the intermediate portion is positioned between the front portion and the rear portion and the intermediate portion is connected to the rear portion but is separated from the front portion and the sides of the intermediate portion by a continuous slot.

4. A structure as set forth in claim 3 in which the tabs are positioned on the sides of the intermediate portion and extend upwardly thereof.

5. A structure as set forth in claim 4 in which the unit is formed of a flexible resilient material.

6. A structure as set forth in claim 1 in which the unit is formed of a flexible resilient material.

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