United States Patent [19]

Korol

[11] **3,760,428**

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[54] **WATER CLOSET TANK**

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[73] Assignee: **Borg-Warner Corporation,** Chicago, Ill.

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[52] **U.S. Cl.** **4/18,** 4/1

[51] **Int. Cl.** **E03d 1/01,** E03d 1/012

[58] **Field of Search** ..... 4/13, 1, 12, 18, 4/68, 20, 25, 26, 170; 220/60 R, 4, 4 B

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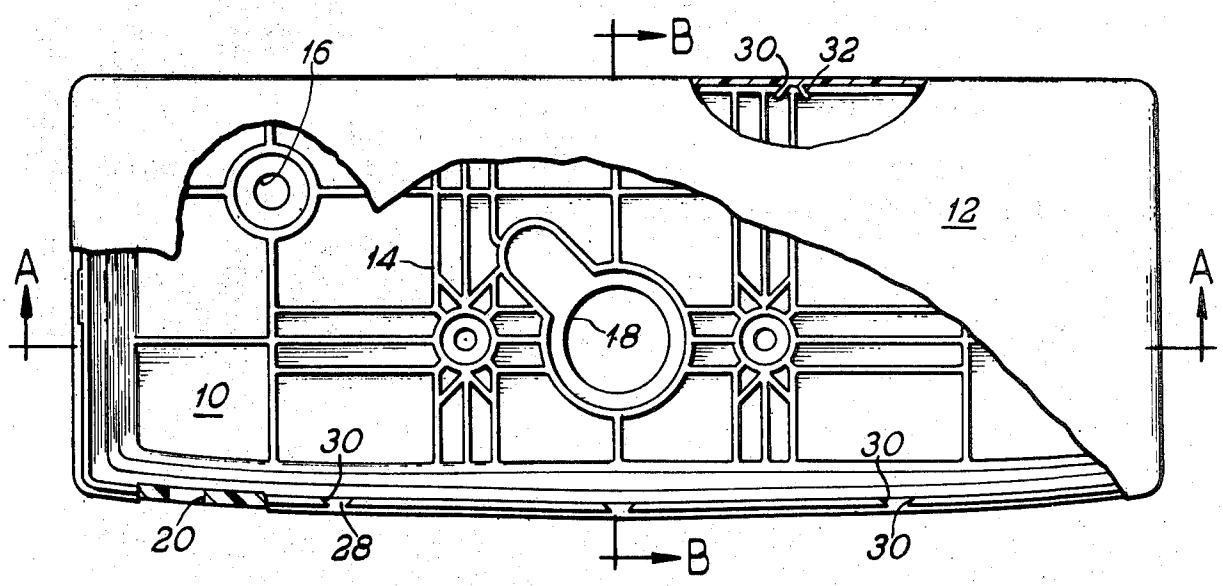
[57] **ABSTRACT**

A flush tank and lid formed of molded plastic, are interlocked by means of one or more keys or tabs formed as part of the lid which engage complementary shaped grooves in the tank.

4 Claims, 7 Drawing Figures



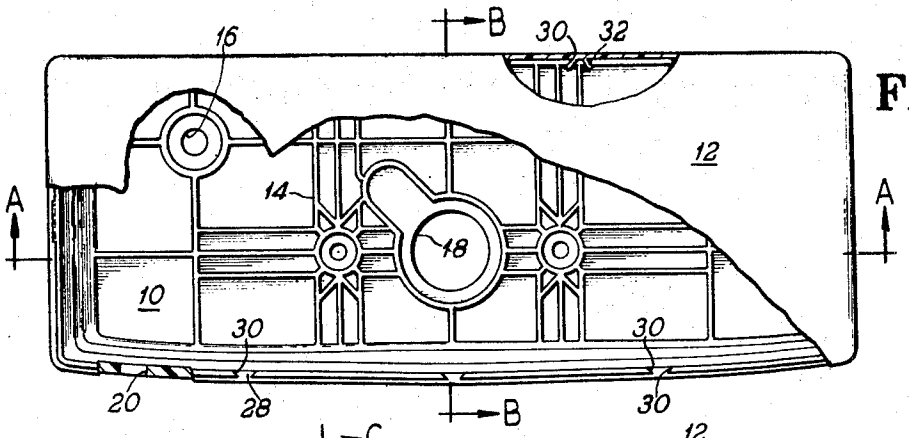


Fig. 1

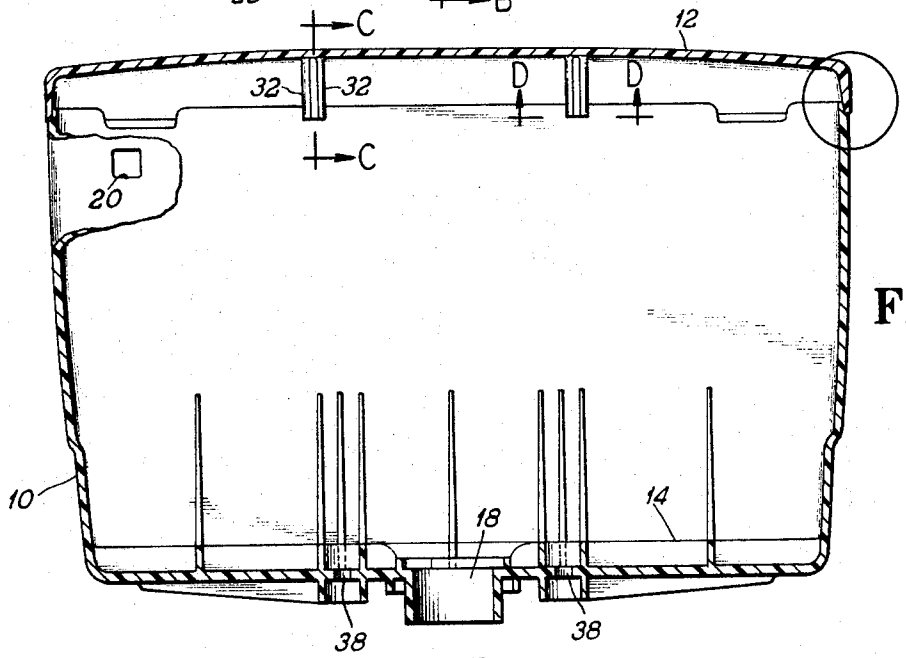


Fig. 2

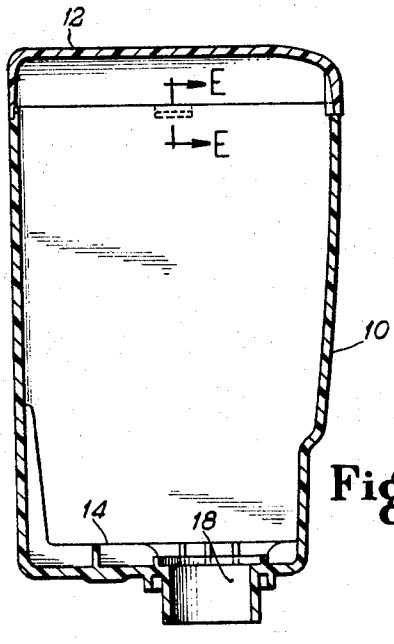


Fig. 3

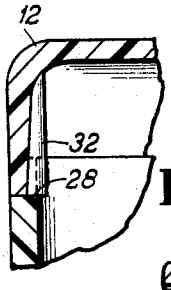


Fig. 4

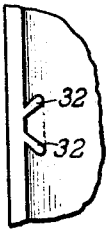


Fig. 5

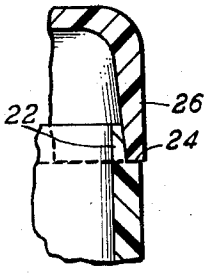


Fig. 6

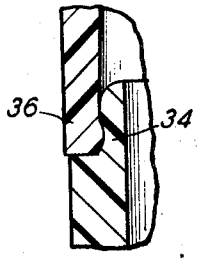


Fig. 7

WATER CLOSET TANK

BACKGROUND OF THE INVENTION

Flush tanks and their lids are usually made of a clay having an exterior glaze. As such, the lid is cast with a groove which rests on top of the tank walls. In the green state, i.e., before firing, the tank and its lid are assembled, cured together and also glazed together to insure a proper fit and color match.

It is desirable to construct tanks and lids from plastic in order to reduce costs, both in manufacture and in shipping. Also, for the same water capacity, a plastic tank can be much smaller in size with thinner wall thicknesses. It becomes desirable to provide means whereby the lid can be interlocked with the tank to provide a smooth appearance and to provide additional rigidity to the assembly.

THE INVENTION

According to this invention, a flush tank and the lid therefor are molded of plastic, such as ABS (acrylonitrile-butadiene-styrene) styrene, a structural foamed plastic or the like and are provided with internal ribs for stiffening to present a smooth exterior. The tank and the lid are constructed with cooperating interlocking means whereby the lid can be removed by lifting, but will be locked against movement in other directions.

The interlocking arrangement comprises a notch in the tank walls having angularly directed walls and a locking means, such as tabs or lugs, a wedge or a keystone on the interior depending surface of the lid. The locking means has angularly directed surfaces which are complementary to the angularly directed walls of the groove, so as to engage the walls to interlock the parts. When the expression tabs or lugs is used herein and in the appended claims, it is intended to include equivalent structure, such as a wedge, a keystone or the like, i.e., a means having angular surfaces which are complementary to the angularly directed walls of the groove or notch.

In a usual tank-lid assembly, there may be a plurality of interlocking devices, generally two or more.

In addition to the interlocking device, the top periphery of the outside of the tank is reduced in thickness to provide a peripheral ledge on which the bottom of the depending walls of the lid rests when the parts are assembled. The interlock groove terminates at the ledge on the tank.

A further locking flange arrangement may be provided, if found necessary or desirable. This entails a portion of the lid formed with a slightly enlarged bottom which registers in a complementary-shaped recess in the tank wall. These intergaging parts can be easily molded in the plastic structure.

THE DRAWINGS

FIG. 1 is an elevational view of a flush tank, lid arrangement with parts broken away constructed according to this invention;

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

FIG. 3 is a sectional view taken on line B—B of FIG. 1;

FIG. 4 is a view taken on line C—C of FIG. 2;

FIG. 5 is a view taken on line D—D of FIG. 2;

FIG. 6 is an enlarged detail of the circled portion of FIG. 2; and

FIG. 7 is an enlarged sectional view taken on line E—E of FIG. 3.

DETAILED DESCRIPTION

The drawings illustrate various details of a flush tank 10 and a lid 12 which are molded of plastic. As such the walls are relatively thin generally requiring rib reinforcement as noted by the reference number 14.

The tank 10 is provided with an inlet opening 16 adapted to be connected to a source of water and also to a conventional ball cock valve, and a discharge opening 18, adapted to be closed by a conventional flapper valve or the like, to discharge water into a water closet, not shown. The front of the tank 10 is provided with an opening 20 to receive a conventional flush handle (not shown).

According to this invention, the upper rim of the tank 10 is reduced in thickness as at 22 to provide a ledge 24 on which the rim 26 of the lid rests when the tank 10 and lid 12 are assembled. As noted there is a slight taper to the reduced thickness portion for ease of assembly.

To lock the lid and tank together against movement in at least one direction, the tank 10 is provided with at least one and preferably a plurality of notches 28 in the rim thereof which terminate at the ledge 24; the notches 28 having angularly arranged walls 30.

The lid is provided with complementary positioned and angularly arranged lugs or tabs 32 which engage the notches 28. In place of lugs or tabs, as illustrated, wedges or keystone shaped members could be used.

In addition, at least a portion and preferably the end portions of the rim portion 22 of the tank 10 is provided with an inwardly reduced portion 34 to receive a complementary shaped locking portion 36 of the rim 26 of the lid 12. This can be best described as a snap locking arrangement.

With the last described snap locking arrangement and the grooves and tabs forming other locking means, it can readily be appreciated that the lid and tank are interlocked in such a manner to permit separation in one direction but resist separation in other directions.

The tank 10 is mounted onto a conventional china water closet (not shown) with gasketed bolts (also not shown) through two openings 38, 38 which are molded with an integral collar, so as to come into intimate contact with the bowl, thereby assuring a rigid connection between the two.

I claim:

1. A flush tank for a water closet comprising:
a plastic tank portion;
a plastic lid portion;
one of said portions having at least a pair of oppositely disposed notches, each with angularly arranged sidewalls which diverge toward the interior of the tank; and the other of said portions having for each notch extending tabs angularly complementary to each angularly arranged notch sidewall to engage said sidewalls and lock said portions together against, movement in at least one direction.

2. A flush tank as recited in claim 1 wherein said one portion is said tank portion and said other portion is said lid portion.

3. A flush tank for a water closet comprising:

a plastic tank portion having a longitudinal ledge means defined by an upstanding wall portion of less thickness than the remainder of the wall;

means in each of the opposed wall of less thickness defining a notch having angularly arranged sidewalls which diverge toward the interior of said tank portion;

a plastic lid for covering said tank portion and having downwardly extending walls adapted to rest on said flange, said lid having tabs angularly complementary to the angularly arranged notch sidewalls for engaging said sidewalls to lock the lid to the tank portion against movement in at least one direction.

4. A flush tank as recited in claim 3 further including snap locking means at the ends of said tank comprising an enlargement of the walls of said lid portion adapted to engage a depression in the upstanding wall of the tank portion.

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