July 31, 1951 P. A. PETERSON 2,562,330

FLUSH TANK

Filed July 26, 1949 2 Sheets-Sheet 1

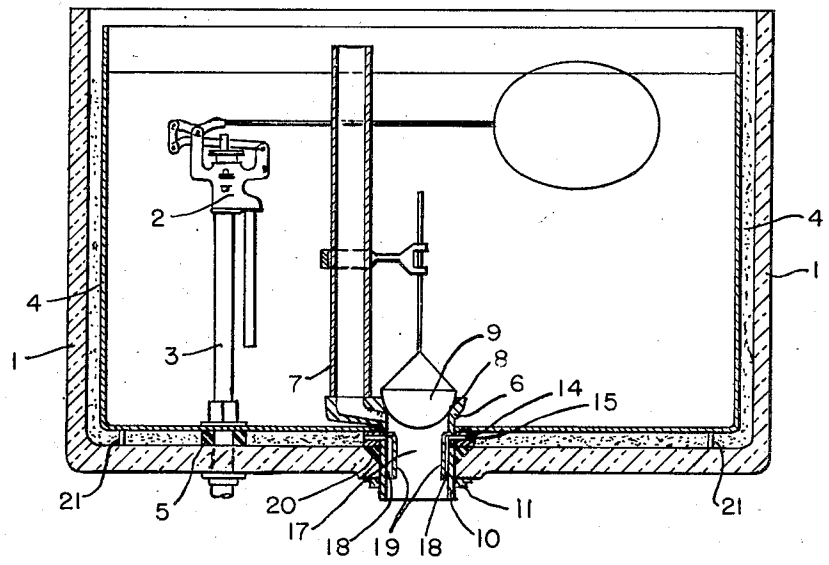


Fig. 1.

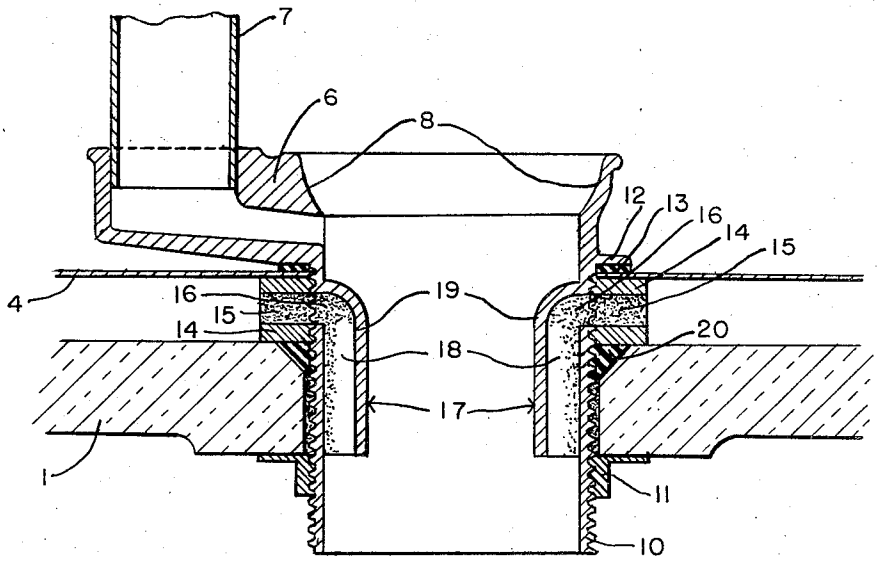


Fig. 2.

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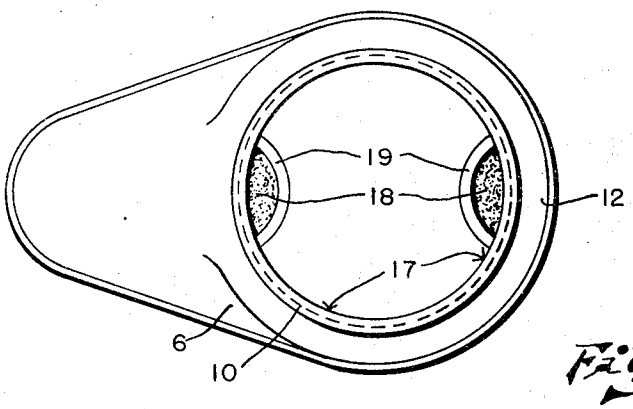


Fig. 3.

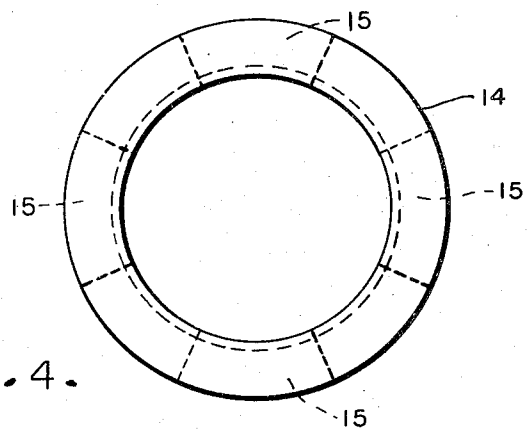


Fig. 4.

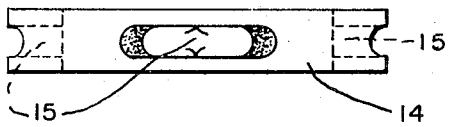


Fig. 5.

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UNITED STATES PATENT OFFICE

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FLUSH TANK

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Application July 26, 1949, Serial No. 106,890

2 Claims. (Cl. 4—68)

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This invention relates to means for preventing the sweating of a water closet flush tank and has special reference to such means employing an inner tank which is held in spaced relation to the inner walls of the flush tank.

It is a generally accepted fact that sweating of a flush tank may be eliminated by mounting an inner liner or tank within the ordinary flush tank, and it is well known that many patents have been issued on devices employing this broad idea. However, none of these patented devices have come into general use. This is due, principally, to the fact that they are either too costly to manufacture or too expensive or inconvenient to install, and in some cases that the fittings are impractical.

It is one of my principal objects to provide a fitting which will permit the installation of an inner tank within a flush tank in a simple and inexpensive manner.

Another object is to provide a fitting which may be used in either old flush tanks or in new construction with equal efficiency and convenience.

Another object is to provide a fitting which may be used without an inner tank if desired as well as with an inner tank.

It is known, of course, that an inner tank, when installed, will sweat and drip into the outer tank. Several devices have been patented which attempt to drain off the water which has dripped into the outer tank, however, here again, none of these devices have proven practical, and therefore it is another of my objects to provide efficient means, in conjunction with my fitting, which will insure drainage of the water from between the tanks.

These and other objects and advantages will become more apparent as the description of the invention proceeds.

In the accompanying drawing forming a part of this application:

Fig. 1 is a vertical sectional view showing my invention installed in a closet flush tank.

Fig. 2 is an enlarged vertical sectional view of my improved fitting.

Fig. 3 is a broken bottom plan view of my fitting showing the drain channels.

Fig. 4 is a plan view of my spacer nut.

Fig. 5 is a side elevational view of Fig. 4.

In the drawing, the reference numeral 1 indicates a common china, or similar, flush tank, 2 indicates the usual water inlet valve and 3 the water pipe which commonly extends into the flush tank through the bottom thereof,

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When installing an inner liner or tank 4, it is, of course, necessary to provide a spacer nut or ring 5 on the water inlet pipe to permit the required water seal to be made, this is within the skill of an ordinary mechanic, and therefore, it is deemed, needs no further explanation here.

However, it is in the flush valve seat fitting 6 where my improvement resides, and this is where prior devices have not proven successful. My valve seat fitting is similar in general design to common valve seat fittings now in use in that it provides a mounting for the overflow tube 7 in offset relation to the seat 8 for the ball valve 9, and has a threaded shank 10 on which the mounting nut 11 is screwed to finish the water tight mounting of the valve seat fitting in the closet.

In order to permit the installation of the inner liner tank 4 in spaced relation to the inner walls of the tank 1, I have extended the length of the shank 10 to give ample room for spacing the liner from the tank as shown.

The valve seat fitting 6 is provided with a flange or collar 12 at the innermost end of the threads against which a gasket 13 is carried to insure a water tight assembly of the valve seat fitting 6 in the flush tank. A spacer nut 14 is screwed on to the shank 10 to secure the fitting in a water tight connection to the inner liner or tank 4, and also is of suitable thickness to space the bottom of the tank 4 from the bottom of the outer tank 1.

The spacer nut has a plurality of bleeder ports 15 through the walls thereof, and the walls of the shank 10 are provided with a plurality of openings or ports 16 therethrough, preferably two as shown, the bleeder ports 15 and ports 16 being in corresponding relation so that water which drips from the inner tank due to sweating or the like will drip into the outer tank and may drain from the outer tank into the water closet through the passage provided by the openings 15—16. It is deemed apparent that the bleeder ports may be laterally elongated as shown and so spaced that a through passage will be provided from the outer tank into the drain passage 17 of the valve seat fitting 6 irrespective of the position to which the spacer nut 14 is tightened to seal the joint between the inner tank and the valve seat fitting.

In order to facilitate and augment the drainage of any water from the space between the inner and outer tanks I provide drain channels 18, preferably by casting walls 19 for same at the time the valve seat fitting 6 is cast. The walls

19 of the channels 18 are preferably arcuate in shape and relatively small in relation to the main drain channel 17 of the valve seat fitting, the walls 19 being preferably hood-shaped at their upper end to close the upper end of the channel over the ports or openings 16. This permits the water from the inner tank to flush through the passage 17 with practically no resistance, yet provides a smooth drain channel from the space between the tanks.

As above set forth, this arrangement of channel 17 augments and facilitates the drainage of water from between the tanks, due principally, to the suction which is created in the channels 18 by the water from the inner tank as it flushes rapidly through the channel 17. This suction has considerable force and draws water, standing between the tanks, through the bleeder ports 15, openings 16, and drain channels 18, each time the closet is flushed, and therefore insures against any accumulation of water between the tanks which might cause the outer tank to sweat.

The inner tank 4 and valve seat fitting are secured in place in the outer tank 1 by means of the nut 11, as above described and the usual cone-shaped rubber washer 20 is employed to secure a water tight joint.

It is deemed apparent that the instant valve seat fitting may, if desired, be used as a common valve seat fitting, simply by not using the spacer nut 14. This will place the ports 16 below the level of the washer 20 where they will have no effect, and will not interfere with the usual flushing action of the tank. This feature will permit the manufacturing of only one fitting 6 to supply either of two uses, it being deemed obvious that the preferred use is with the spacer nut and inner tank.

Suitable supports 21 are provided, of course, to support the inner tank 4 off the bottom of the tank 1.

Having thus described my invention what I claim is:

1. In a flush tank having an outer tank and an auxiliary tank within said outer tank and held in spaced relation thereto: a valve seat fitting comprising a body portion having a valve seat within said inner tank, a threaded tubular shank extending from said body portion through said inner and outer tanks, said tubular shank providing a drain for said inner tank, a spacer nut on said shank intermediate of said inner and outer tanks and providing means to make a watertight seal between said body portion and said inner tank, said shank having drain ports therethrough adjacent said nut and said nut having bleeder ports corresponding with said drain ports whereby water may drain from the space between said tanks into said drain, and walls within said tubular shank hooding said drain ports to form drain channels leading from said drain ports in the direction of the drain of water through said drain whereby water passing from said inner tank through said drain will create a syphon action through said drain channels, drain ports and bleeder ports to augment the draining of water from between said tanks.

2. A valve seat fitting comprising a body portion having a valve seat on the upper face thereof, a threaded tubular shank extending from said body portion on the face opposite said seat, said tubular shank providing a drain from said valve seat, a spacer nut on said shank, said shank having drain ports therethrough adjacent said nut, said nut having bleeder ports corresponding with said drain ports providing a drain for water adjacent said nut to pass into said drain, and walls within said tubular shank hooding said drain ports to form drain channels leading from said drain ports in the direction of the drain of water through said drain whereby water passing through said drain will create a syphon action through said drain channels, drain ports and bleeder ports to augment the draining of water from adjacent said nut.

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The following references are of record in the file of this patent:

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