Nov. 7, 1939. B. O. TILDEN 2,179,309

CLOSE CONNECTED WATER CLOSET COMBINATION

Filed March 2, 1939

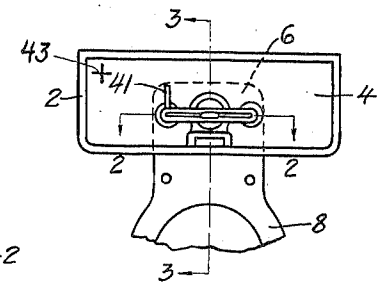


Fig.1.

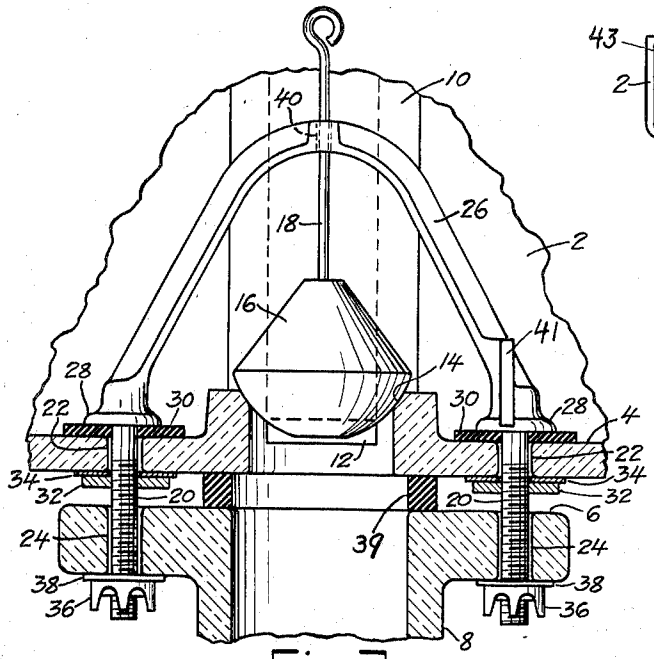


Fig.2.

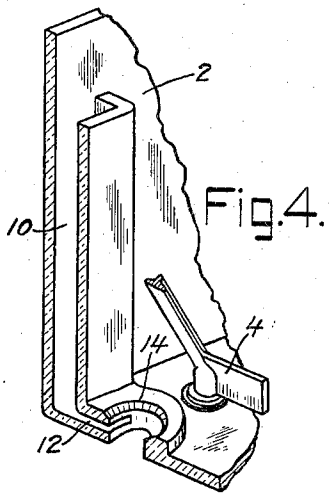


Fig.4.

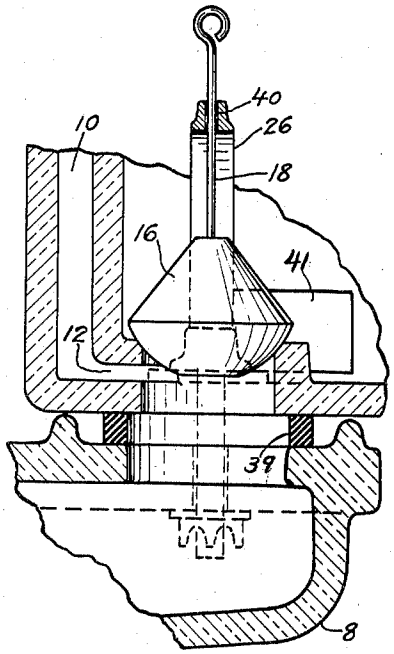


Fig.3.

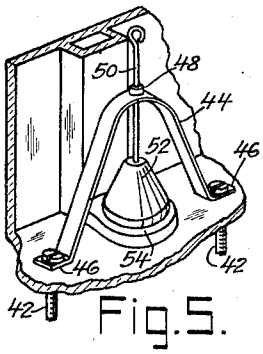


Fig.5.

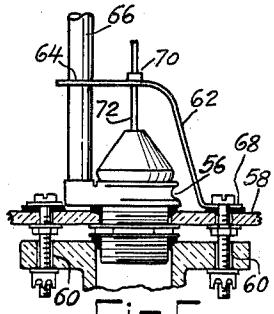


Fig.6.

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CLOSE CONNECTED WATER CLOSET COMBINATION

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8 Claims. (Cl. 4—57)

My invention relates to close connected water closet combinations of the type wherein a tank is secured directly to a bowl and a valve provided for controlling the flow of water from the tank to the bowl.

The valve mechanism most commonly used in water closets includes a rubber ball having a valve stem for raising the valve from its seat to initiate a flushing operation together with means engaging the valve stem to guide the valve in its movement toward and away from the valve seat. When the overflow tube is formed separately from the tank and attached to the valve mechanism the guide for the valve stem is usually secured to the overflow tube whereas in those constructions in which the overflow tube is formed integral with the tank and therefore made of porcelain or vitreous china various other means are employed for engaging and guiding the valve stem. In either construction the guide means for the valve stem heretofore employed have been easily displaced or bent so as to prevent proper seating of the valve and therefore the valve frequently leaks.

In close connected water closet combinations bolts or other means passing through the bottom of the tank are employed for securing the tank to the bowl but such means have not been used for any other purpose.

In accordance with my invention the means for guiding the valve in its movement is held in place by the means employed for securing the tank to the bowl and it is therefore possible to support the guide means in such a way as to prevent ready displacement or breaking thereof and also to connect the attaching means to each other so as to prevent loss or displacement of the attaching means.

One of the objects of my invention is to provide novel guide means for a valve which are secured in place by elements employed for attaching the tank to the bowl.

Another object of my invention is to provide a novel type of attaching means for producing close connected water closet combinations.

A further object of my invention is to provide a close connected water closet combination with spaced means for securing the tank to the bowl together with means extending from one of said attaching means to another and serving to guide a valve in its movement toward and away from a valve seat.

These and other objects and features of my invention will appear from the following description thereof in which reference is made to the figures of the accompanying drawing which illustrate typical embodiments of my invention.

In the drawing:

Fig. 1 is a top plan view of a portion of a tank and bowl having means embodying my invention applied thereto;

Fig. 2 is an enlarged vertical sectional view of a portion of the construction illustrated in Fig. 1, taken on the line 2—2 thereof;

Fig. 3 is an enlarged vertical sectional view of a portion of the construction illustrated in Fig. 1 taken on the line 3—3 thereof;

Fig. 4 is a perspective of a portion of a tank and related elements illustrating the embodiment of my invention shown in Figs. 1, 2 and 3.

Fig. 5 is a perspective of a portion of a tank and valve construction illustrating an alternative embodiment of my invention, and

Fig. 6 is a view partly in vertical section and partly in elevation illustrating a further alternative embodiment of my inventon.

That form of my nvention illustrated in Figs. 1 to 4 is applied to a tank 2 having a bottom 4 resting upon a portion 6 of a bowl 8. An overflow tube 10 is formed integral with the tank and communicates with a discharge opening 12 below the valve seat 14. A valve 16 in the form of a rubber ball is provided with a valve stem 18 which extends upward therefrom to raise the valve and initiate a flushing operation.

The tank 2 is secured to the bowl by elements in the form of attaching means 20 which extend downward through openings 22 in the bottom 4 of the tank and through openings 24 in the portion 6 of the bowl. The upper portion of the means 20 is in the form of an inverted yoke 26 of general V-shape provided with a flange 28 positioned to bear against a packing member 30 resting upon the upper surface of the bottom of the tank for sealing the openings 22. The lower portions of the attaching means 20 are threaded and nuts 32 and slip ring 34 engage the attaching means beneath the bottom of the tank for securing them and the yoke 26 in position with respect to the tank. Other nuts 36 and slip rings 38 are applied to the attaching means beneath the portion 6 of the bowl for securing the tank to the bowl and for compressing the circular packing member 39 between the tank and the bowl and surrounding the discharge opening.

The upper portion of the yoke 26 extends across the valve seat and is spaced above the same a sufficient distance to permit the valve to be raised off the valve seat in initiating a flushing operation. The yoke 26 is provided with guide

means for engaging the stem of the valve and for this purpose is shown as provided with an aperture 40 through which the valve stem passes. The guide means for the valve are thus held firmly in place and in proper alignment with the valve seat by the means employed for attaching the tank to the bowl. Moreover the guide means is supported at each end thereof and cannot be readily bent, displaced or broken so that proper operation of the valve is assured.

In that form of my invention illustrated in Fig. 2 the attaching means 20 are shown as formed integral with the yoke 26. However this is not always necessary or even desirable and therefore it should be understood that the attaching means and bolt may be connected to each other in any suitable manner.

In some instances and particularly where water is supplied to the tank under high pressure the incoming water flows from the ball cock or other inlet means against the valve with such force as to prevent the valve from seating properly or to drive it off its seat. In order to overcome this difficulty means are provided such as the deflector 41 which is located between the valve and the ball cock or other inlet indicated at 43 and preferably is secured to an element of the valve mechanism such as the yoke 26. The deflector 41 projects above the valve seat 14 and may be spaced from the bottom of the tank or otherwise formed and positioned to prevent the valve from being displaced by the incoming water.

As illustrated in Fig. 5 the attaching means employed are in the form of conventional bolts 42 which pass downward through openings in the bottom of the tank whereas the yoke is in the form of a flat metal strap 44 having feet 46 on the opposite ends thereof which bear against the tank bottom and through which the attaching bolts 42 pass. The upper portion of the yoke is provided with a ferrule 48 or other means for engaging the valve stem 50 and guiding the valve 52 in its movement into and out of engagement with the valve seat 54.

Each of the foregoing constructions is illustrated as applied to a tank having an integral overflow. However it will be apparent that they are not limited in their use to this type of construction but are of general application and may be used with tanks and valve mechanism of the type more commonly employed wherein a valve member carrying an overflow is attached to a tank. However, as illustrated in Fig. 5 it is also possible in such constructions to secure the desired strength and alignment of the guide means for the valve when only one end of the yoke is held in place by the means employed for attaching the tank to the bowl provided the other end thereof is suitably supported, as by engaging the overflow tube.

In the construction shown in Fig. 5 a valve member 56 is secured to a tank 58 in a conventional manner and bolts 60 are employed for securing the tank to the bowl. A yoke 62 is formed on one end with a collar 64 which may be slipped over the overflow tube 66 so as to be held in position thereby. The opposite end of the yoke is provided with a foot 68 through which one of the attaching bolts passes to hold the yoke in place. A ferrule 70 or other guide means is formed in or carried by the yoke for engaging the valve stem 72 of the valve and in this way displacement of the valve guiding means is prevented and a simple economical construction provided for insuring proper operation of the valve.

While various alternative embodiments of my invention are illustrated in the drawing and herein described it will be apparent that other arrangements and combinations of elements may be made to embody my invention. In view thereof it should be understood that the forms of my invention shown and described in detail are intended to be illustrative of my invention and are not intended to limit the scope thereof.

I claim:

1. In a water closet combination having a tank, a bowl and a valve controlling the flow of water from the tank to the bowl, the combination of a yoke having attaching means carried thereby and extending through registering openings in the tank and bowl, means on said attaching means engaging said tank and bowl to secure said tank and bowl together, a valve stem on said valve and means on said yoke engaging said valve stem to guide the valve in its movement toward and away from a valve seat.

2. In a water closet combination having a tank, a bowl, means for securing the tank to the bowl and valve mechanism including a valve member and an overflow tube, the combination of means for guiding the valve in its movement toward and away from a valve seat comprising a valve stem on said valve and a member extending between said attaching means and said overflow tube and engaging said valve stem.

3. In a water closet combination having a tank, a bowl, means for attaching the tank to the bowl and a valve controlling the flow of water from the tank to the bowl, the combination of a deflector located adjacent the valve to prevent water entering the tank from adversely influencing operation of the valve, said deflector being held in place by the means employed for securing the tank to the bowl.

4. In a water closet combination having a tank, a bowl and valve mechanism including a member having a valve seat, a valve and means for guiding the valve in its movement toward and away from the valve seat in controlling the flow of water from the tank to the bowl, the combination of means for securing the tank to the bowl and means for preventing water entering the tank from adversely influencing the operation of said valve comprising a deflector secured to an element of said valve mechanism and projecting above said valve seat, said element being held in place by said securing means.

5. In a water closet combination having a tank with a discharge opening and bolt holes spaced from said opening, a bowl having a water inlet and bolt holes registering with the bolt holes in the bottom of the tank, and a valve controlling the flow of water through the discharge opening in the tank to the water inlet in the bowl, the combination of attaching means passing through the bolt holes in the tank and bowl for securing the tank to the bowl and means for guiding said valve in its movement toward and away from a valve seat comprising a valve stem on said valve means and means engaging said valve stem secured in place by said attaching means.

6. In a water closet combination having a tank the bottom of which is formed with a discharge opening and bolt holes spaced from said opening, a bowl having a water inlet and bolt holes registering with the bolt holes in the bottom of the tank and a valve controlling the flow of water through the discharge opening in the tank to the water inlet in the bowl, the combination of attaching means passing through the bolt holes in

the tank and bowl for securing the tank to the bowl and means for guiding the valve in its movement toward and away from a valve seat comprising a valve stem on said valve and means engaging said valve stem extending from one of said attaching means to another.

7. In a water closet combination having a tank the bottom of which is formed with a discharge opening and bolt holes spaced from said opening, a bowl having a water inlet and bolt holes registering with the bolt holes in the bottom of the tank and a valve controlling the flow of water through the discharge opening in the tank to the water inlet in the bowl, the combination of attaching means passing through the bolt holes in the tank and bowl for securing the tank to the bowl and means for guiding the valve in its movement toward and away from a valve seat comprising a valve stem on said valve and a yoke held in place by said attaching means and extending across said valve seat above said valve and means engaging said valve stem.

8. In a water closet combination having a tank the bottom of which is formed with a discharge opening and bolt holes spaced from said opening, a bowl having a water inlet and bolt holes registering with the bolt holes in the bottom of the tank and a valve controlling the flow of water through the discharge opening in the tank to the water inlet in the bowl, the combination of attaching means passing through the bolt holes in the tank and bowl for securing the tank to the bowl and means for guiding the valve in its movement toward and away from a valve seat comprising a valve stem on said valve, an inverted V-shaped yoke secured in place by said attaching means and extending across said valve seat above the valve, and means on said yoke for engaging and guiding said valve stem.

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